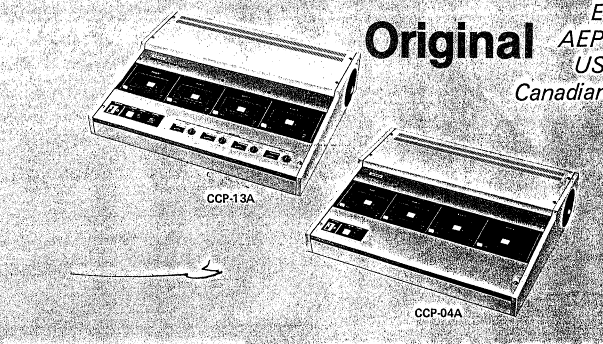
CCP-13A/04A

822

E Model
AEP Model
US Model
Canadian Model

Original



CCP-13A: one master unit and three slave units
CCP-04A: four slave units

CASSETTE-TO-CASSETTE PRINTER

SPECIFICATIONS

Power Requirements:	120V ac, 60 Hz (US, Canadian model) 110–120V, 220–240V ac, 50/60 Hz (E model) 220–240V ac, 50 Hz (AEP model)
Power Consumption:	93W (CCP-13A) 90W (CCP-04A)
Track System:	4-track 4-channel 4-track 2-channel
Tape Speed:	38 cm/s (15 ips)
Copy Time:	Approx. 4 min. for C-60 (at one run)
Tape Cassette:	Sony C-30, C-60, C-90, UHF C-60, UHF C-90 (UHF tape only for US model), HF C-60, HF C-90 (HF tape for non-US model) Fe-Cr C-60 or any standard cassette (chromium dioxide cassette are not recommended)
Cross Talk:	4-track 4-channel Between tracks 2 and 3: better than 45 dB (1 kHz) Between tracks 1 and 2, Between tracks 3 and 4: better than 26 dB (1 kHz) 4-track 2-channel Between tracks 2 and 3: better than 50 dB (1 kHz)
Rewind Time:	Approx. 1 min. 10 sec. for C-60
Frequency Response:	50 Hz–10,000 Hz for Sony C-60 UHF or HF
Signal-to-Noise Ratio:	45 dB
Wow and Flutter:	0.2% (WRMS)
Overall Distortion:	3%
Record Bias Frequency:	480 kHz
Inputs:	LINE IN .... 4 Impedance: 10 kΩ Normal level: 24.5 mV (-30 dB)
Outputs:	LINE OUT .... 4 Impedance: 600 Ω Level: 24.5 mV (-30 dB) impedance more than 10 kΩ load
Dimensions:	690 (w) x 164 (h) x 568 (d) mm 27 1/8 (w) x 6 1/4 (h) x 22 3/8 (d) inches including projecting parts and controls
Weight:	Approx. 22.5 kg, 49 lb 9 oz

0 dB = 0.775V

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND ⚠ MARK ON THE SHCEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Original

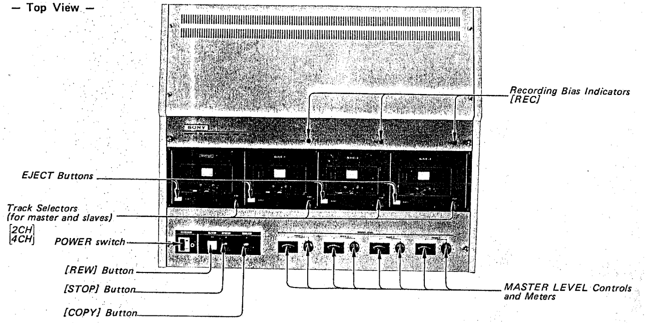
SONY®

SERVICE MANUAL

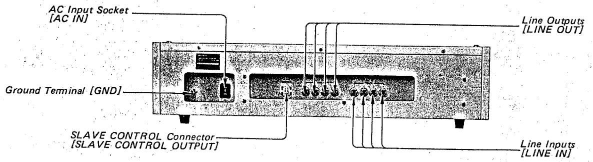
SECTION 1
OUTLINE

1-1. EXTERNAL VIEW (CCP-13A)

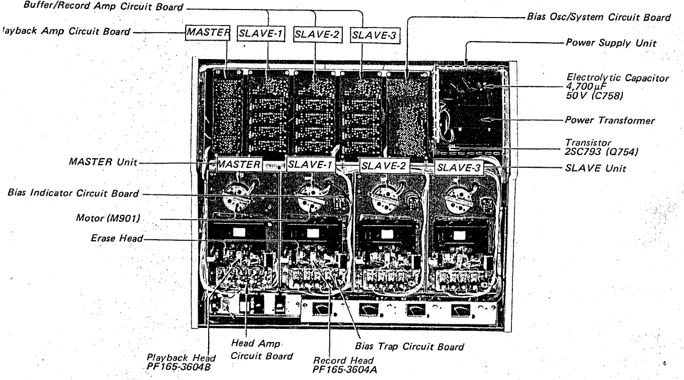
– Top View –


Recording Bias Indicators [REC]
EJECT Buttons
Track Selectors (for master and slaves)
[2CH 4CH]
POWER switch
[REW] Button
[STOP] Button
[COPY] Button
MASTER LEVEL Controls and Meters
SONY

– Rear View –

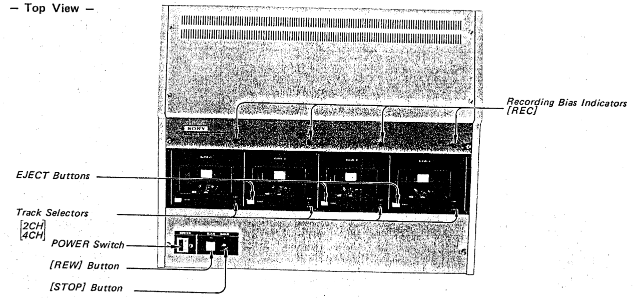

AC Input Socket [AC IN]
Line Outputs [LINE OUT]
Ground Terminal [GND]
SLAVE CONTROL Connector [SLAVE CONTROL OUTPUT]
Line Inputs [LINE IN]

1-2. INTERNAL VIEW (CCP-13A) – Top View –

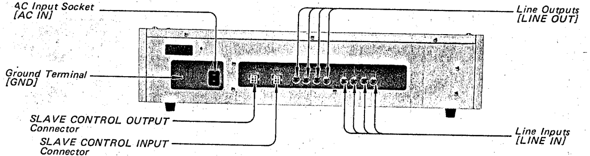

Buffer/Record Amp Circuit Board
layback Amp Circuit Board
MASTER
SLAVE-1
SLAVE-2
SLAVE-3
Bias Osc/System Circuit Board
Power Supply Unit
Electrolytic Capacitor 4,700μF 50V (C758)
Power Transformer
Transistor 2SC793 (Q754)
MASTER Unit
SLAVE Unit
Bias Indicator Circuit Board
Motor (M901)
Erase Head
Playback Head PF165-3604B
Head Amp Circuit Board
Record Head PF165-3604A
Bias Trap Circuit Board

1-3. EXTERNAL VIEW (CCP-04A)

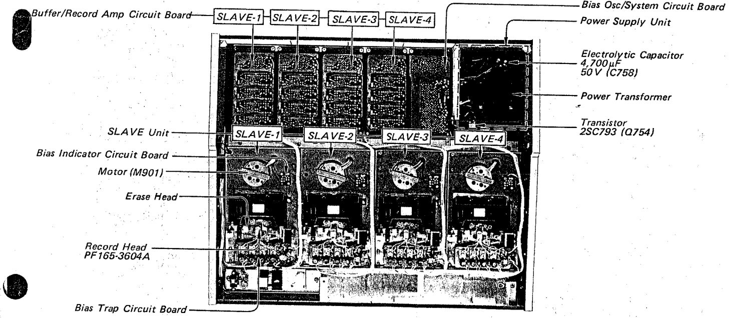
– Top View –


Recording Bias Indicators [REC]
EJECT Buttons
Track Selectors
[2CH 4CH]
POWER Switch
[REW] Button
[STOP] Button
SONY

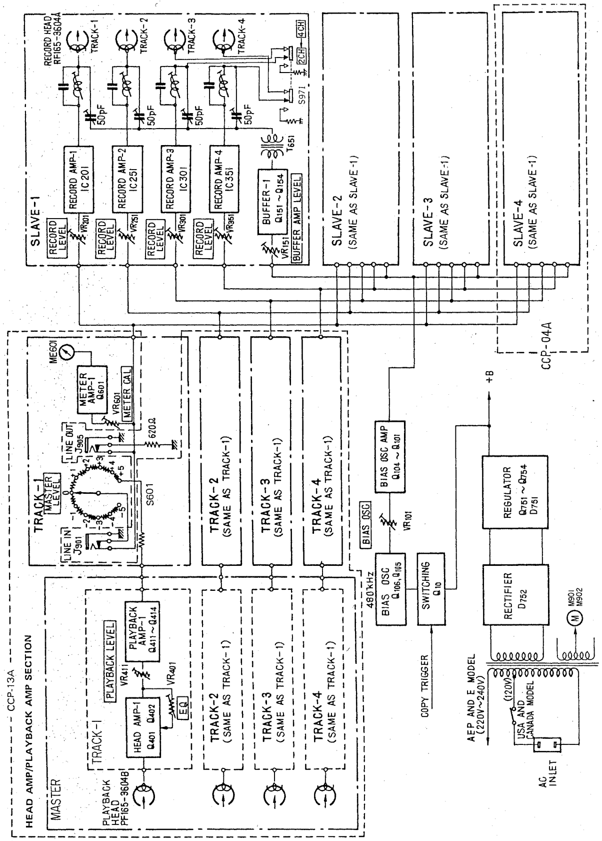
– Rear View –


AC Input Socket [AC IN]
Line Outputs [LINE OUT]
Ground Terminal [GND]
SLAVE CONTROL OUTPUT Connector
SLAVE CONTROL INPUT Connector
Line Inputs [LINE IN]

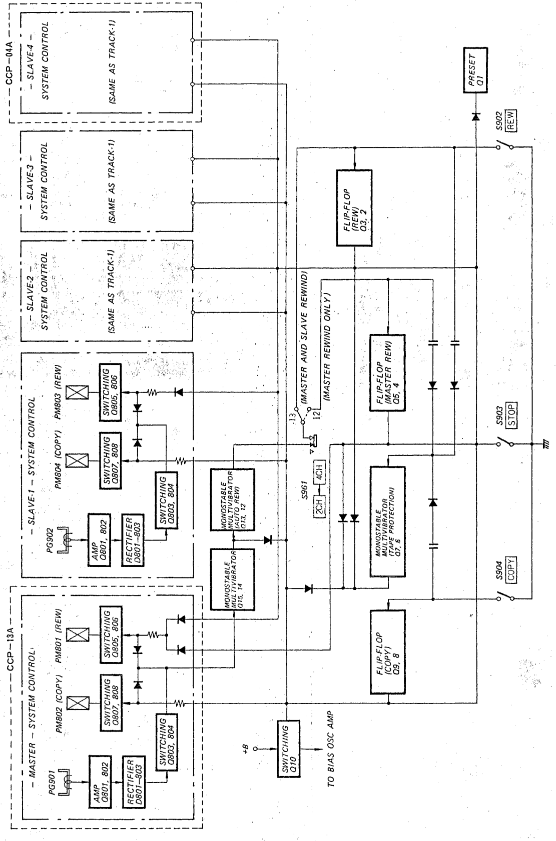
1-4. INTERNAL VIEW (CCP-04A) – Top View –


Buffer/Record Amp Circuit Board
SLAVE-1
SLAVE-2
SLAVE-3
SLAVE-4
Bias Osc/System Circuit Board
Power Supply Unit
Electrolytic Capacitor 4,700μF 50V (C758)
Power Transformer
Transistor 2SC793 (Q754)
SLAVE Unit
Bias Indicator Circuit Board
Motor (M901)
Erase Head
Record Head PF165-3604A
Bias Trap Circuit Board

1-5. BLOCK DIAGRAMS – Audio Amp Section (CCP-13A/04A) –


RECORD HEAD RF165-3604A
TRACK-1
TRACK-2
TRACK-3
TRACK-4
4CH
2CH
S971
50pF
T651
RECORD AMP-1 IC201
RECORD AMP-2 IC251
RECORD AMP-3 IC301
RECORD AMP-4 IC351
BUFFER-1 Q151 ~ Q154
BUFFER AMP LEVEL
VR151
RECORD LEVEL
VR201
VR251
VR301
VR351
SLAVE-1
SLAVE-2 (SAME AS SLAVE-1)
SLAVE-3 (SAME AS SLAVE-1)
SLAVE-4 (SAME AS SLAVE-1)
CCP-04A
ME601
METER AMP-1 Q601
VR601
METER CAL
620Ω
LINE OUT J905
S601
TRACK-1
MASTER LEVEL
LINE IN J901
TRACK-2 (SAME AS TRACK-1)
TRACK-3 (SAME AS TRACK-1)
TRACK-4 (SAME AS TRACK-1)
BIAS OSC AMP Q104 ~ Q101
BIAS OSC
VR101
480kHz
BIAS OSC Q106, Q105
SWITCHING Q10
COPY TRIGGER
+B
REGULATOR Q751 ~ Q754 D751
RECTIFIER D752
M901 M902
AEP AND E MODEL (220V~240V)
(120V)
USA AND CANADA MODEL
AC INLET
PLAYBACK LEVEL
PLAYBACK AMP-1 Q411 ~ Q414
VR411
VR401
EQ
HEAD AMP-1 Q401 Q402
TRACK-1
PLAYBACK HEAD PF165-3604B
MASTER
HEAD AMP/PLAYBACK AMP SECTION
CCP-13A

1-6. BLOCK DIAGRAMS – System Control Section (CCP-13A/04A) –


CCP-04A
– SLAVE-4 – SYSTEM CONTROL
(SAME AS TRACK-1)
– SLAVE-3 – SYSTEM CONTROL
(SAME AS TRACK-1)
– SLAVE-2 – SYSTEM CONTROL
(SAME AS TRACK-1)
– SLAVE-1 – SYSTEM CONTROL
PM803 (REW)
PM804 (COPY)
SWITCHING Q805, 806
SWITCHING Q807, 808
SWITCHING Q803, 804
PG902
AMP Q801, 802
RECTIFIER D801~803
CCP-13A
– MASTER – SYSTEM CONTROL
PM801 (REW)
PM802 (COPY)
PG901
PRESET Q1
S902 REW
FLIP-FLOP (REW) Q3, 2
(MASTER AND SLAVE REWIND)
(MASTER REWIND ONLY)
13
12
FLIP-FLOP (MASTER REW) Q5, 4
S903 STOP
S961
2CH
4CH
MONOSTABLE MULTIVIBRATOR (AUTO REW) Q11, 12
MONOSTABLE MULTIVIBRATOR Q15, 14
MONOSTABLE MULTIVIBRATOR (TAPE PROTECTION) Q7, 6
S904 COPY
FLIP-FLOP (COPY) Q9, 8
+B
SWITCHING Q10
TO BIAS OSC AMP

SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS (CCP-13A/04A)

Note: The mechanical adjustments are performed in the same way for both the master unit and the slave unit. This photograph shows the slave unit only.

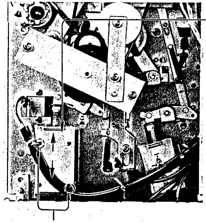
Forward Solenoid Position Adjustment

– COPY Mode –

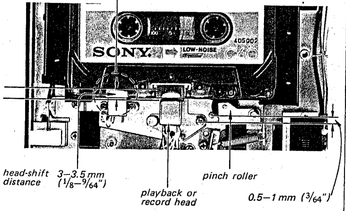
Note: After completing adjustment, make sure that forward torque is as specified. Specification: 35 to 53 g·cm (0.49 to 0.73 oz·inch)

② *Adjust forward solenoid position by moving solenoid in the arrow direction for specified head-shift distance, and tighten the solenoid-mounting screws.*

③ *Make sure that the clearance is specified as shown.*



① *Loosen solenoid-mounting screws.*



SONY
LOW-NOISE
head-shift distance
3–3.5 mm ($1/8$–$9/64$")
playback or record head
pinch roller
0.5–1 mm ($3/64$")

Rewind Solenoid Position Adjustment

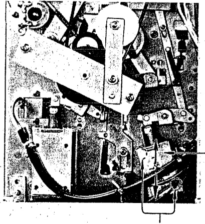
– Rewind Mode –

Note: After completing the adjustment, make sure that rewind torque is as specified. Specification: 60 to 110 g·cm (0.83 to 1.5 oz·inch)

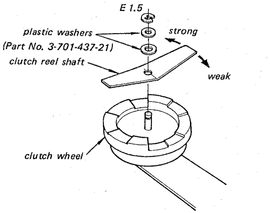
② *Install the cassette torque meter Sony CQ-201A.*

③ *Adjust rewind solenoid position by moving solenoid in the arrow direction for maximum rewind torque, and tighten the solenoid-mounting screws.*

④ *If necessary, change the position of the clutch reel shaft and the number of the plastic washers. As the number of the plastic washers increased, torque becomes stronger.*



① *Loosen solenoid-mounting screws.*

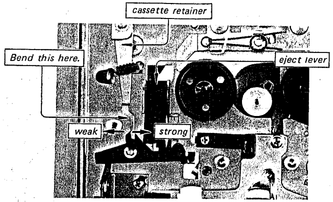


E 1.5
plastic washers
(Part No. 3-701-437-21)
strong
clutch reel shaft
weak
clutch wheel

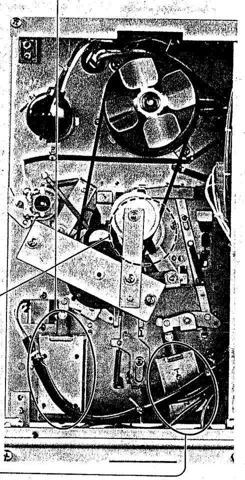
Cassette Retainer Pressure Adjustment

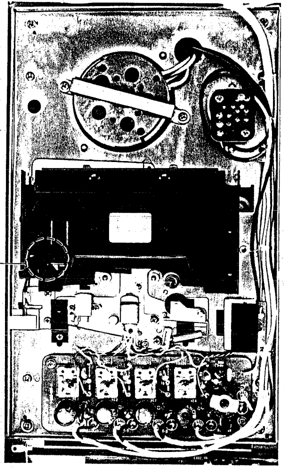
– Stop Mode –

1. Too strong pressure of cassette retainer makes it impossible to eject the cassette by depressing EJECT button.
2. Too weak pressure of cassette retainer makes the tape path unstable.



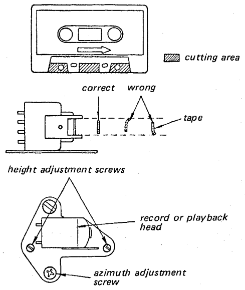
cassette retainer
Bend this here.
eject lever
weak
strong





Record and Playback Head Height Adjustment

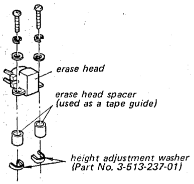
1. Cut cassette as shown to make alignment tape cassette.
2. Install alignment tape cassette and depress COPY button and STOP button alternately and watch the tape at tape guide.
3. In COPY mode, if tape is curled along tape guide, adjust the height-adjustment screw.
4. Azimuth adjustment should be done after this adjustment.

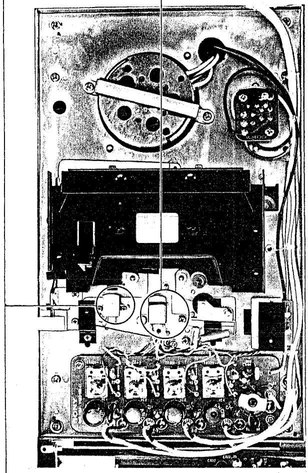

▨ cutting area
correct
wrong
tape
height adjustment screws
record or playback head
azimuth adjustment screw

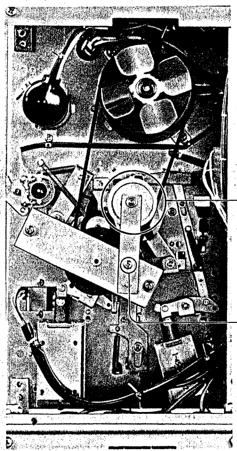
Erase Head Height Adjustment

Note: The erase head is used as a tape guide.

1. Install the alignment tape cassette and depress COPY button and STOP button alternately and watch the tape at the guide.
2. Adjust the erase head height by adding or removing the head-height adjustment washers so that the tape travels without curl in the tape guide of the head. Use the same pieces of washer at both sides.


erase head
erase head spacer (used as a tape guide)
height adjustment washer (Part No. 3-513-237-01)

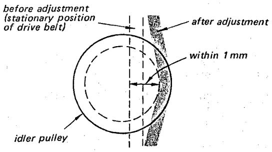



adjustment screw

Idler Pulley Position Adjustment

– COPY Mode –

1. Loosen the adjustment screw.
2. Adjust the position of the idler pulley so that it lightly touches and pushes the drive belt outwards within 1 mm.
3. Tighten the adjustment screw at the position where the idler pulley just rotates following the travel of the belt.


before adjustment (stationary position of drive belt)
after adjustment
within 1 mm
idler pulley

2-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with an alcohol moistened swab:

record head	pinch roller
playback head	rubber belts
erase head	idlers
capstan	tape guides

2. Demagnetize record head and playback head with a head demagnetizer.
3. Do not use magnetized screwdriver for adjustments.
4. After adjustments, apply locking paint to the adjusted parts.
5. Adjustments should be performed in the order given in this service manual.
6. Adjustments and measurements should be performed with rated power supply voltage unless otherwise specified.

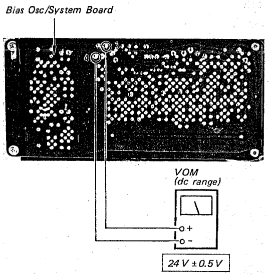
Tape speed of CCP-13A/04A is eight times of normal cassette recorder. The test tapes are, therefore, played back with eight-times frequency of the original.

Test Tape	Original Freq.	Playback Freq. with CCP-13A/04A
P-4-A80	1 kHz	8 kHz
P-4-A81	6.3 kHz	50.4 kHz
P-4-A82	10 kHz	80 kHz
P-4-L81 P-4-L82	333 Hz	2,664 Hz

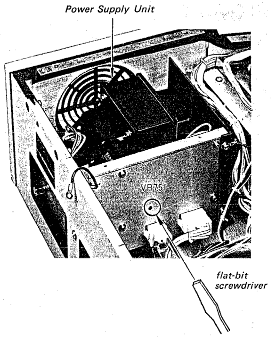
B+ Voltage Adjustment (CCP-13A/04A)

Procedure:

1. Mode: COPY


Bias Osc/System Board
VOM
(dc range)
+
-
24 V ±0.5 V

2. Adjust VR751 to obtain 23.5 V–24.5 V reading on the VOM (dc range).


Power Supply Unit
VR751
flat-bit screwdriver

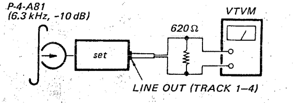
Playback Head Azimuth Adjustment (CCP-13A)

Setting:

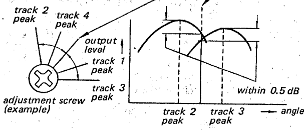
track switch: 4CH

Procedure:

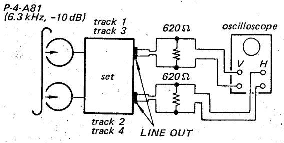
1. Mode: COPY (playback)

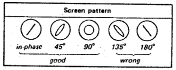

P-4-A81
(6.3 kHz, -10 dB)
set
620 Ω
VTVM
LINE OUT (TRACK 1–4)

2. Turn the adjustment screw for the maximum level in each track and set it to the mechanical mid position between track 2 and track 3 peak positions.


track 2 peak
track 4 peak
output level
track 1 peak
track 3 peak
adjustment screw (example)
within 0.5 dB
track 2 peak
track 3 peak
angle

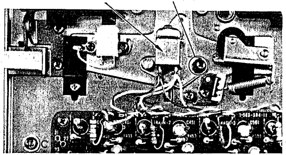
3. Mode: COPY (playback)


P-4-A81
(6.3 kHz, -10 dB)
track 1
track 3
620 Ω
oscilloscope
set
620 Ω
V
H
track 2
track 4
LINE OUT


Screen pattern
in-phase
45°
90°
135°
180°
good
wrong

Adjustment Location:

— Master Unit —


head
adjustment screw

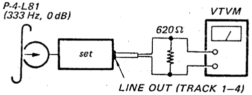
Playback Level Adjustment (CCP-13A)

Setting:

track switch: 4CH
S601 (LEVEL switch): 0 dB

Procedure:

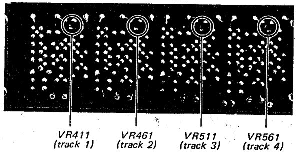
1. Mode: COPY (playback)


P-4-L81
(333 Hz, 0 dB)
set
620 Ω
VTVM
LINE OUT (TRACK 1–4)

Adjust	VTVM reading	Remarks
VR411 (track 1) VR461 (track 2) VR511 (track 3) VR561 (track 4)	25 mV (-30 dB)	Level difference between the tracks should be within ± 1 dB.

Adjustment Location:

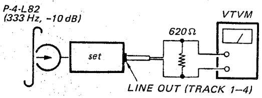
— Playback Amp Board —


VR411
(track 1)
VR461
(track 2)
VR511
(track 3)
VR561
(track 4)

Playback Equalizer Adjustment (CCP-13A)

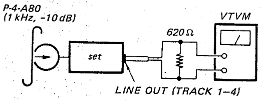
Procedure:

1. Mode: COPY (playback)


P-4-L82
(333 Hz, –10 dB)
VTVM
620 Ω
set
LINE OUT (TRACK 1–4)

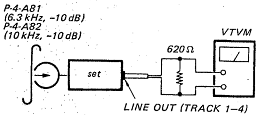
Memorize VTVM reading.

2. Mode: COPY (playback)


P-4-A80
(1 kHz, –10 dB)
VTVM
620 Ω
set
LINE OUT (TRACK 1–4)

Adjust	VTVM reading
VR401 (track 1) VR451 (track 2) VR501 (track 3) VR551 (track 4)	same as those memorized in step 1.

3. Mode: COPY (playback)

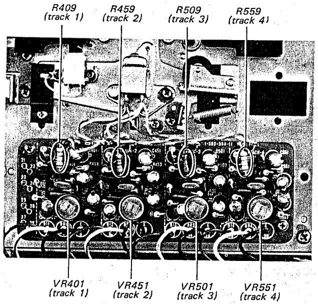

P-4-A81
(6.3 kHz, –10 dB)
P-4-A82
(10 kHz, –10 dB)
VTVM
620 Ω
set
LINE OUT (TRACK 1–4)

Adjust (50 k–300 kΩ)	VTVM reading
R409 (track 1) R459 (track 2) R509 (track 3) R559 (track 4)	same as those memorized in step 1. Reading rises as resistor value increases.

Demagnetize the head when the resistor is changed.

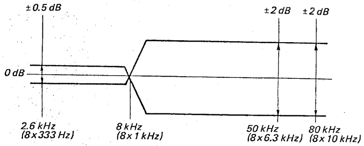
Adjustment Location:

– Head Amp Board –


R409 (track 1)
R459 (track 2)
R509 (track 3)
R559 (track 4)
VR401 (track 1)
VR451 (track 2)
VR501 (track 3)
VR551 (track 4)

Note: If the adjustment variable resistors are turned too much, perform the playback level adjustment again.

Specification:



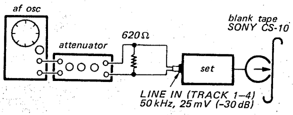
Record Head Azimuth Adjustment (CCP-13A/04A)

Setting:

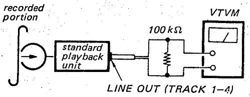
- Prepare a standard stereo playback unit – a stereo cassette recorder of which playback head azimuth is correctly adjusted.
- track switch: 4CH

Procedure:

1. Mode: COPY { Master Unit .... playback
   Slave Unit .... record

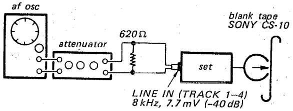

af osc
attenuator
620 Ω
blank tape
SONY CS-10
set
LINE IN (TRACK 1–4)
50 kHz, 25 mV (–30 dB)

2. Standard Playback Unit: playback mode

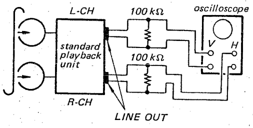

recorded portion
VTVM
100 kΩ
standard playback unit
LINE OUT (TRACK 1–4)

Measure the output level.

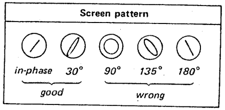
3. Slowly turn the azimuth adjustment screw by repeating step 1 and step 2 for a maximum output.
4. Mode: COPY


af osc
attenuator
620 Ω
blank tape
SONY CS-10
set
LINE IN (TRACK 1–4)
8 kHz, 7.7 mV (–40 dB)

5. Standard playback

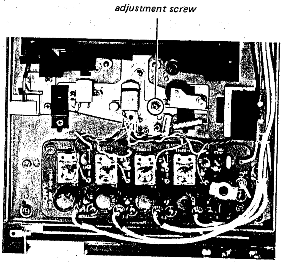

L-CH
100 kΩ
oscilloscope
V
H
standard playback unit
100 kΩ
R-CH
LINE OUT

Perform phase check between tracks 1 and 2, and between tracks 3 and 4. If the good condition is not obtained, slightly turn the adjustment screw for a good condition.


Screen pattern
in-phase
30°
90°
135°
180°
good
wrong

Adjustment Location:

– Slave Unit –


adjustment screw

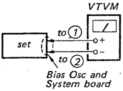
Record Bias Amplitude Adjustment (CCP-13A/04A)

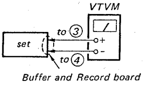
Setting:

track switch: 4CH
trimmer capacitors VC651 through VC654 on bias trap board: loosened by turning counterclockwise

Procedure:

1. Mode: COPY (playback)

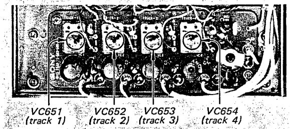

VTVM
set
to ①
to ②
+
–
Bias Osc and System board


VTVM
set
to ③
to ④
+
–
Buffer and Record board

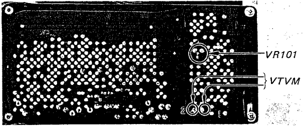
2. Adjust VR101 for a 2 V (+8 dB) reading on the VTVM.
3. Adjust VR151 for a 5 V (+16 dB) reading on the VTVM.

Adjustment Location:

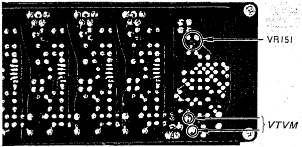
– Bias Trap Control Board –


VC651 (track 1)
VC652 (track 2)
VC653 (track 3)
VC654 (track 4)

– Bias Osc/System Board –


VR101
VTVM
2
1

– Buffer/Record Amp Board –


VR151
VTVM
3
4

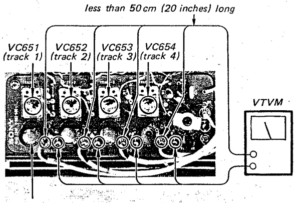
Record Bias Preadjustment and Record Bias Trap Adjustment (CCP-13A/04A)

Setting:

track switch: 4CH

Procedure:

1. Mode: COPY
   Loosen the trimmer capacitors VC651 through VC654 by turning counterclockwise.

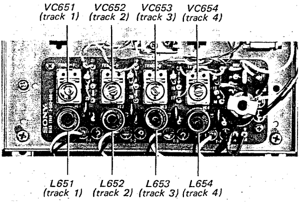

less than 50 cm (20 inches) long
VC651 (track 1)
VC652 (track 2)
VC653 (track 3)
VC654 (track 4)
VTVM

Bias Trap Board

2. Tighten the trimmer VC651 (track 1) by turning it clockwise.
3. Adjust L651 (track 1) for a minimum reading on the VTVM.
4. Adjust VC651 (track 1) for a 30 mV (–28 dB) reading on the VTVM.
5. Perform steps 2, 3 and 4 for VC652 and L652 (track 2), VC653 and L653 (track 3) and VC654 and L654 (track 4).
6. After the adjustment, fix L651 through L654 with wax.

Adjustment Location:

– Bias Trap Board –


VC651 (track 1)
VC652 (track 2)
VC653 (track 3)
VC654 (track 4)
L651 (track 1)
L652 (track 2)
L653 (track 3)
L654 (track 4)

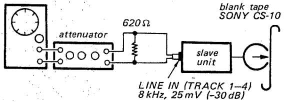
Record Bias Adjustment (CCP-13A/04A)

Setting:

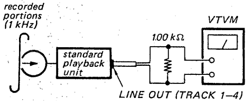
- Prepare a standard playback unit – a cassette recorder.
- track switch: 4CH
- Set VR201, VR251, VR301 and VR351 to the mechanical mid position.

Procedure:

1. Mode: COPY { Master Unit .... no tape cassette installed / Slave Unit .... record


af osc
attenuator
620Ω
slave unit
blank tape SONY CS-10
LINE IN (TRACK 1–4) 8kHz, 25mV (-30dB)

2. Standard Playback Unit: playback mode

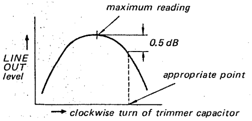

recorded portions (1kHz)
standard playback unit
100kΩ
VTVM
LINE OUT (TRACK 1–4)

3. Adjust VC651 (track 1) for a maximum reading on the VTVM by repeating steps 1 and 2.
4. Adjust the trimmer capacitors for a maximum reading on the VTVM by repeating steps 1 and 2 for tracks 2 through 4.

Adjust
trimmer capacitor, VC652 (track 2) VC653 (track 3) VC654 (track 4)

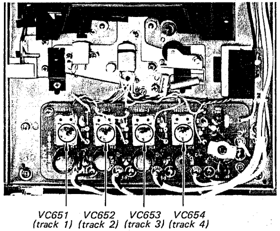
5.

Adjust	Remarks
trimmer capacitor, VC651 (track 1) VC652 (track 2) VC653 (track 3) VC654 (track 4)	Slowly turn the trimmer capacitor clockwise until VTVM reads 0.2dB below and beyond the maximum reading as shown.

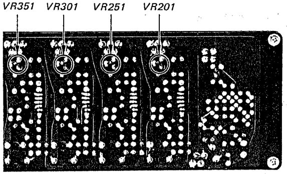


Adjustment Location:

– Bias Trap Board –


VC651 (track 1)
VC652 (track 2)
VC653 (track 3)
VC654 (track 4)

– Buffer/Record Amp Board –


VR351
VR301
VR251
VR201

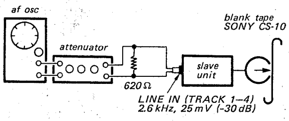
Record Level Adjustment (CCP-13A/04A)

Setting:

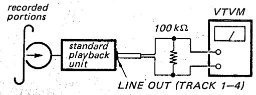
- Prepare a standard playback unit – a cassette recorder.
- track switch: 4CH

Procedure:

1. Mode: COPY { Master Unit .... no tape cassette installed / Slave Unit .... record


af osc
attenuator
620Ω
slave unit
blank tape SONY CS-10
LINE IN (TRACK 1–4) 2.6kHz, 25mV (-30dB)

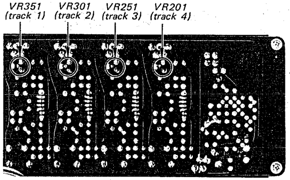
2. Standard Playback Unit: playback mode


recorded portions
standard playback unit
100kΩ
VTVM
LINE OUT (TRACK 1–4)

3. Adjust VR201 (track 1), VR251 (track 2), VR301 (track 3) and VR351 (track 4) for a Standard Playback Unit output LEVEL reading on the VTVM.

Adjustment Location:

– Buffer/Record Amp Board –


VR351 (track 1)
VR301 (track 2)
VR251 (track 3)
VR201 (track 4)

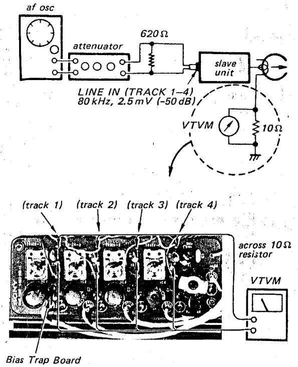
Record Equalizer Adjustment (CCP-13A/04A)

Setting:

track switch: 4CH

Procedure:

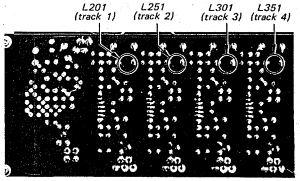
1. Mode: COPY { Master Unit .... no tape cassette installed / Slave Unit .... record


af osc
attenuator
620Ω
slave unit
LINE IN (TRACK 1–4) 80kHz, 2.5mV (-50dB)
VTVM
10Ω
(track 1)
(track 2)
(track 3)
(track 4)
across 10Ω resistor
VTVM
Bias Trap Board

Adjust	Remarks
record equalizer coil, L201 (track 1) L251 (track 2) L301 (track 3) L351 (track 4)	Adjust record equalizer coil for maximum reading on the VTVM.

Adjustment Location:

– Buffer/Record Amp Board –


L201 (track 1)
L251 (track 2)
L301 (track 3)
L351 (track 4)

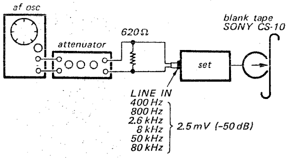
Overall Frequency Response Check (CCP-13A/04A)

Setting:

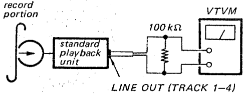
- Prepare a standard playback unit – a cassette recorder.
- track switch: 4CH

Procedure:

1. Mode: COPY { Master Unit .... playback / Slave Unit .... record


af osc
attenuator
620Ω
set
blank tape
SONY CS-10
LINE IN
400 Hz
800 Hz
2.6 kHz
8 kHz
50 kHz
80 kHz
2.5 mV (-50 dB)

2. Standard Playback Unit: playback mode


record
portion
standard
playback
unit
100 kΩ
VTVM
LINE OUT (TRACK 1–4)

Memorize the output level.

Specification: 50 Hz–10 kHz ±3 dB.

If necessary, proceed to step 3.

3.

Adjust	Procedure
trimmer capacitor, VC651 (track 1) VC652 (track 2) VC653 (track 3) VC654 (track 4)	Slowly turn the trimmer capacitor clockwise until VTVM reads 0.5 dB below and beyond the maximum reading.

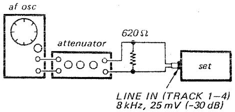
MASTER LEVEL Meter Adjustment (CCP-13A)

Setting:

MASTER LEVEL controls: 0 dB

Procedure:

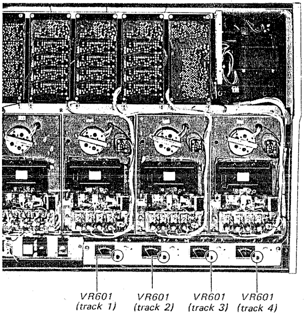
1. Mode: COPY


af osc
attenuator
620Ω
set
LINE IN (TRACK 1–4)
8 kHz, 25 mV (-30 dB)

Adjust	MASTER LEVEL meter indication
VR601 (TRACK-1)	ME601 "0"
VR601 (TRACK-2)	ME602 "0"
VR601 (TRACK-3)	ME603 "0"
VR601 (TRACK-4)	ME604 "0"

Adjustment Location:

– Meter Amp Board –


VR601
(track 1)
VR601
(track 2)
VR601
(track 3)
VR601
(track 4)

SECTION 3
ADAPTATION TO LOCAL LINE FREQUENCY

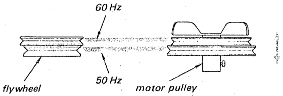
3-1. ADAPTATION TO LOCAL LINE FREQUENCY

The CCP-13A/04A can be adapted to operate on the another ac local line frequency by changing drive belt position, motor starting capacitor wiring, motor lead-wire wiring as shown.

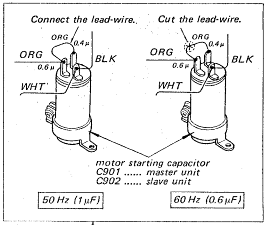
3-1-1. Drive Belt Position Changing

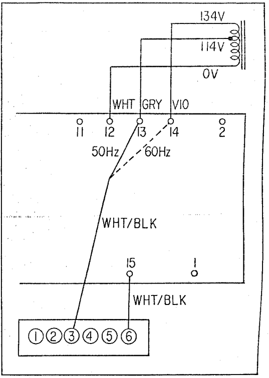
Position the drive belt as shown below in accordance with the local line frequency.

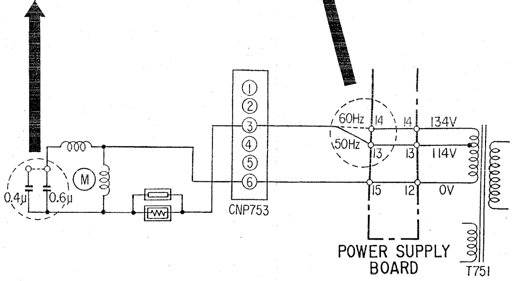
Adjust the height of the motor pulley so that the belt does not vibrate in operation of COPY mode.


60 Hz
50 Hz
flywheel
motor pulley

3-1-2. Circuit Changing


Connect the lead-wire.
Cut the lead-wire.
ORG
0.4μ
ORG
0.6μ
BLK
WHT
ORG
0.4μ
ORG
0.6μ
BLK
WHT
motor starting capacitor
C901 ...... master unit
C902 ...... slave unit
50 Hz (1μF)
60 Hz (0.6μF)

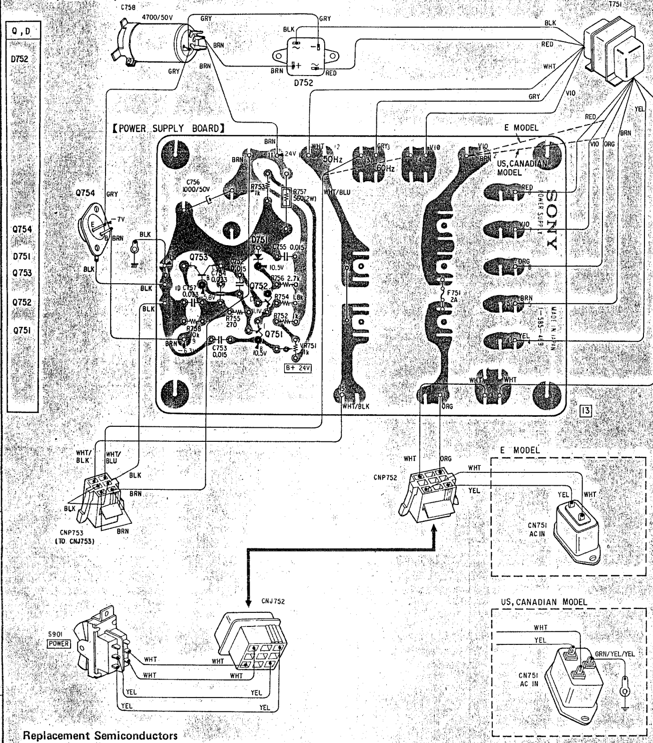

134V
114V
0V
WHT
GRY
VIO
11
12
13
14
2
50Hz
60Hz
WHT/BLK
15
1
WHT/BLK
①②③④⑤⑥


0.4μ
0.6μ
M
①
②
③
④
⑤
⑥
CNP753
60Hz
50Hz
14
13
15
14
13
12
134V
114V
0V
POWER SUPPLY
BOARD
T751

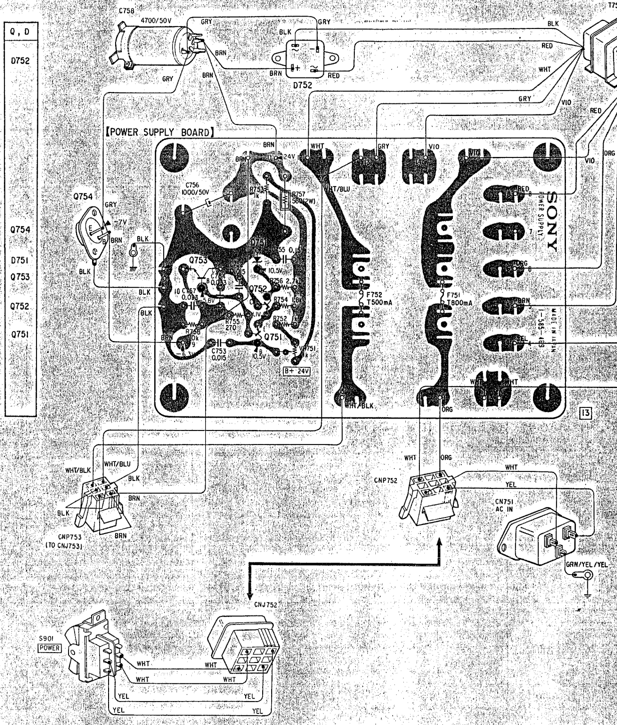
Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

4-1. MOUNTING DIAGRAMS – Power Supply Circuit Board (CCP-13A/04A) –

US, Canadian, E model


Q , D
D752
Q754
D751
Q753
Q752
Q751
C758
4700/50V
GRY
BRN
BLK
RED
WHT
D752
T751
VIO
YEL
【POWER SUPPLY BOARD】
E MODEL
US, CANADIAN MODEL
24V
50Hz
60Hz
WHT/BLU
WHT/BLK
ORG
C756
1000/50V
R753 1k
R757 560(2W)
Q754
-7V
D751
C755 0.015
10.5V
Q753
C754 0.033
C752 0.015
C757 0.033
-5.8V
Q752
R756 2.7k
R754 1.8k
R752 1k
R755 270
R758 10k
-6.3V
C753 0.015
Q751
11.1V
VR751 1k
B+ 24V
F751 2A
SONY
POWER SUPPLY
MADE IN JAPAN
1-585-419
13
WHT/BLK
WHT/BLU
CNP753 (TO CNJ753)
CNP752
E MODEL
CN751 AC IN
S901
POWER
CNJ752
US, CANADIAN MODEL
GRN/YEL/YEL
CN751 AC IN

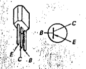
AEP model


Q , D
D752
Q754
D751
Q753
Q752
Q751
C758
4700/50V
GRY
BRN
BLK
RED
WHT
D752
T751
VIO
YEL
ORG
【POWER SUPPLY BOARD】
24V
WHT/BLU
WHT/BLK
C756
1000/50V
R753 1k
R757 560(2W)
Q754
-7V
D751
10.5V
Q753
Q752
R756 2.7k
R754 1.8k
R752
R755 270
R758 10k
C753 0.015
Q751
VR751
B+ 24V
F752 T500mA
F751 T800mA
SONY
POWER SUPPLY
MADE IN JAPAN
1-585-419
13
CNP753 (TO CNJ753)
CNP752
CN751 AC IN
GRN/YEL/YEL
S901
POWER
CNJ752

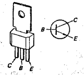
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

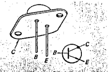
Q751, 752: 2SA678 (2SA677)



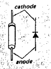
Q753: 2SC1014 (2SC1013)



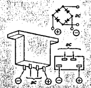
Q754: 2SC1116 (2SC793)



D751: 1S335


cathode
anode

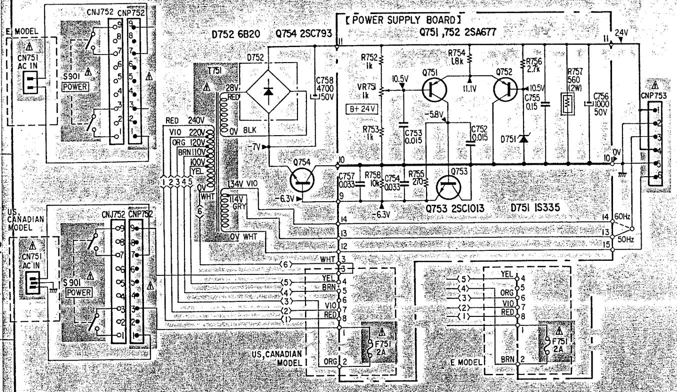
D752: 6B20



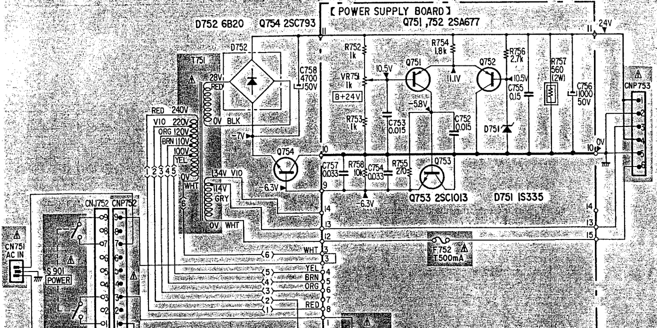
Note: ● ▨ : B+ pattern.

4-2. SCHEMATIC DIAGRAMS — Power Supply Sections (CCP-13A/04A) —

US, Canadian, E model


E MODEL
CN751
AC IN
S901
POWER
CNJ752
CNP752
【POWER SUPPLY BOARD】
D752 6B20
Q754 2SC793
Q751 ,752 2SA677
24V
T751
D752
28V
RED
0V BLK
RED 240V
VIO 220V
ORG 120V
BRN 110V
100V
YEL
0V
WHT
134V VIO
114V
GRY
0V WHT
C758
4700
50V
R752
1k
VR751
1k
B+ 24V
R753
1k
10.5V
C753
0.015
R754
1.8k
Q751
Q752
11.1V
-5.8V
C752
0.015
R756
2.7k
10.5V
C755
0.15
D751
R757
560
(2W)
C756
1000
50V
CNP753
0V
-7V
Q754
-6.3V
C757
0.033
R758
10k
C754
0.033
R755
270
Q753
-6.3V
Q753 2SC1013
D751 1S335
60Hz
50Hz
US, CANADIAN MODEL
F751
2A
US,CANADIAN MODEL
ORG
E MODEL
BRN
F751
2A

AEP model


【POWER SUPPLY BOARD】
D752 6B20
Q754 2SC793
Q751 ,752 2SA677
24V
T751
D752
28V
RED
0V BLK
RED 240V
VIO 220V
ORG 120V
BRN 110V
100V
YEL
0V
WHT
134V VIO
114V
GRY
0V WHT
C758
4700
50V
R752
1k
VR751
1k
B+24V
R753
1k
10.5V
C753
0.015
R754
1.8k
Q751
Q752
11.1V
-5.8V
C752
0.015
R756
2.7k
10.5V
C755
0.15
D751
R757
560
(2W)
C756
1000
50V
CNP753
0V
-7V
Q754
6.3V
C757
0.033
R758
10k
C754
0.033
R755
270
Q753
6.3V
Q753 2SC1013
D751 1S335
CN751
AC IN
S901
POWER
CNJ752
CNP752
F752
T500mA
F751
T800mA
VIO

Note:

- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- ※ : selected to yield optimum performance.
- ▬ : B+ bus.
- ☐ : panel designation.
- ☐ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S901	POWER	OFF

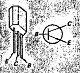
4-3. MOUNTING DIAGRAMS
— Meter, Playback, Head Amp, Buffer/Record Amp Circuit Board (CCP-13A) —

Replacement Semiconductors

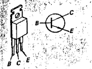
For replacement, use semiconductors except in ( ).

Q152, Q411–413, Q461–463, Q511–513, Q561–563, Q601 : 2SC634A

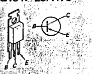
Q402, 452, Q502, 552 : 2SC632 (2SC631)



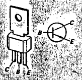
Q153: 2SC1173



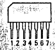
Q154: 2SA473



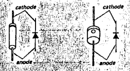
Q414, 464, Q514, 564 : 2SC1014



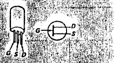
IC201, 251, IC301, 351 : TA7066P



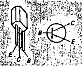
D151, 152: 10E2 (10D2)
D601, 602: 1S1555 (1T40)


cathode
anode
cathode
anode

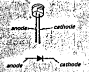
Q401, 451, Q501, 551 : 2SK43-5 (2SK43)



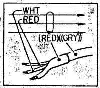
Q151: 2SA678



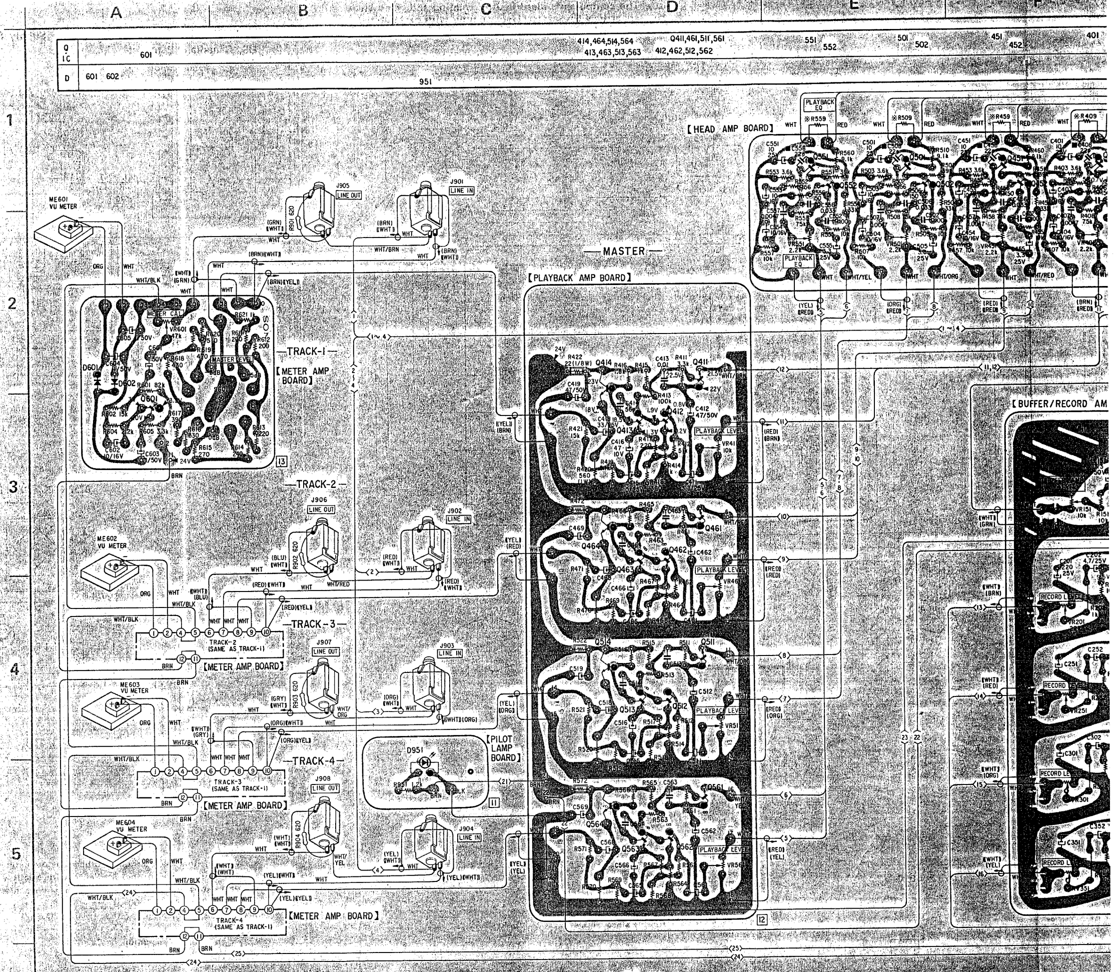
D951: SLP-224B

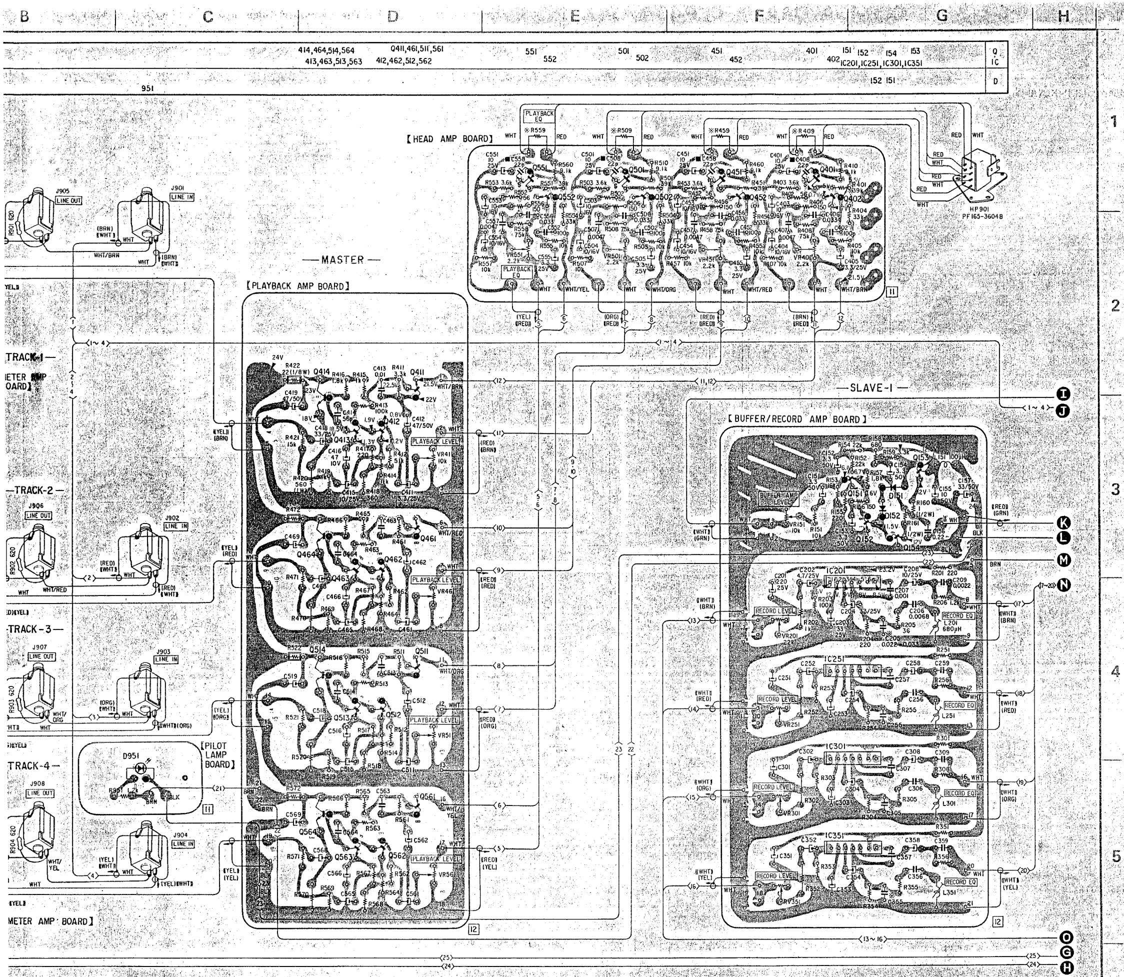

anode
cathode
anode
cathode

Note:
- ■ : part mounted on the conductor side.
- ▨ : B+ pattern.
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

	A	B	C	D	E	F
Q IC	601			414,464,514,564 413,463,513,563 Q411,461,511,561 412,462,512,562	551 552 501 502	451 452 401
D	601 602		951			

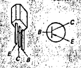

A
B
C
D
E
F
1
2
3
4
5
[HEAD AMP BOARD]
PLAYBACK EQ
MASTER
[PLAYBACK AMP BOARD]
[BUFFER/RECORD AM
ME601 VU METER
ME602 VU METER
ME603 VU METER
ME604 VU METER
J901 LINE IN
J902 LINE IN
J903 LINE IN
J904 LINE IN
J905 LINE OUT
J906 LINE OUT
J907 LINE OUT
J908 LINE OUT
TRACK-1
TRACK-2
TRACK-3
TRACK-4
[METER AMP BOARD]
TRACK-2 (SAME AS TRACK-1)
TRACK-3 (SAME AS TRACK-1)
TRACK-4 (SAME AS TRACK-1)
[PILOT LAMP BOARD]
D951
METER CAL
MASTER LEVEL
PLAYBACK LEVEL
RECORD LEVEL
VR601
VR41
VR46
VR51
VR56
VR151
VR201
VR251
VR301
VR351
WHT
RED
BRN
ORG
YEL
BLU
GRY
WHT/BLK
13
12
11


B
C
D
E
F
G
H
1
2
3
4
5
Q
IC
D
951
【HEAD AMP BOARD】
PLAYBACK EQ
※R559
※R509
※R459
※R409
HP901
PF165-3604B
—MASTER—
【PLAYBACK AMP BOARD】
PLAYBACK LEVEL
—SLAVE-1—
【BUFFER/RECORD AMP BOARD】
BUFFER AMP LEVEL
RECORD LEVEL
RECORD EQ
TRACK-1
TRACK-2
TRACK-3
TRACK-4
METER AMP BOARD
J905 LINE OUT
J901 LINE IN
J906 LINE OUT
J902 LINE IN
J907 LINE OUT
J903 LINE IN
J908 LINE OUT
J904 LINE IN
【PILOT LAMP BOARD】
D951
IC201
IC251
IC301
IC351
I
J
K
L
M
N
O
G
H
RED
WHT
BRN
YEL
ORG
BLK

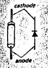
4-4. MOUNTING DIAGRAMS

— Bias Indicator, Bias Trap, Track Selector, Buffer/Record Circuit Board (CCP-13A) —

Q701: 2SC634A

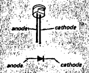


D651: 1S1555 (1T40)



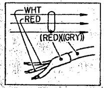
cathode
anode

D701: SLP24B

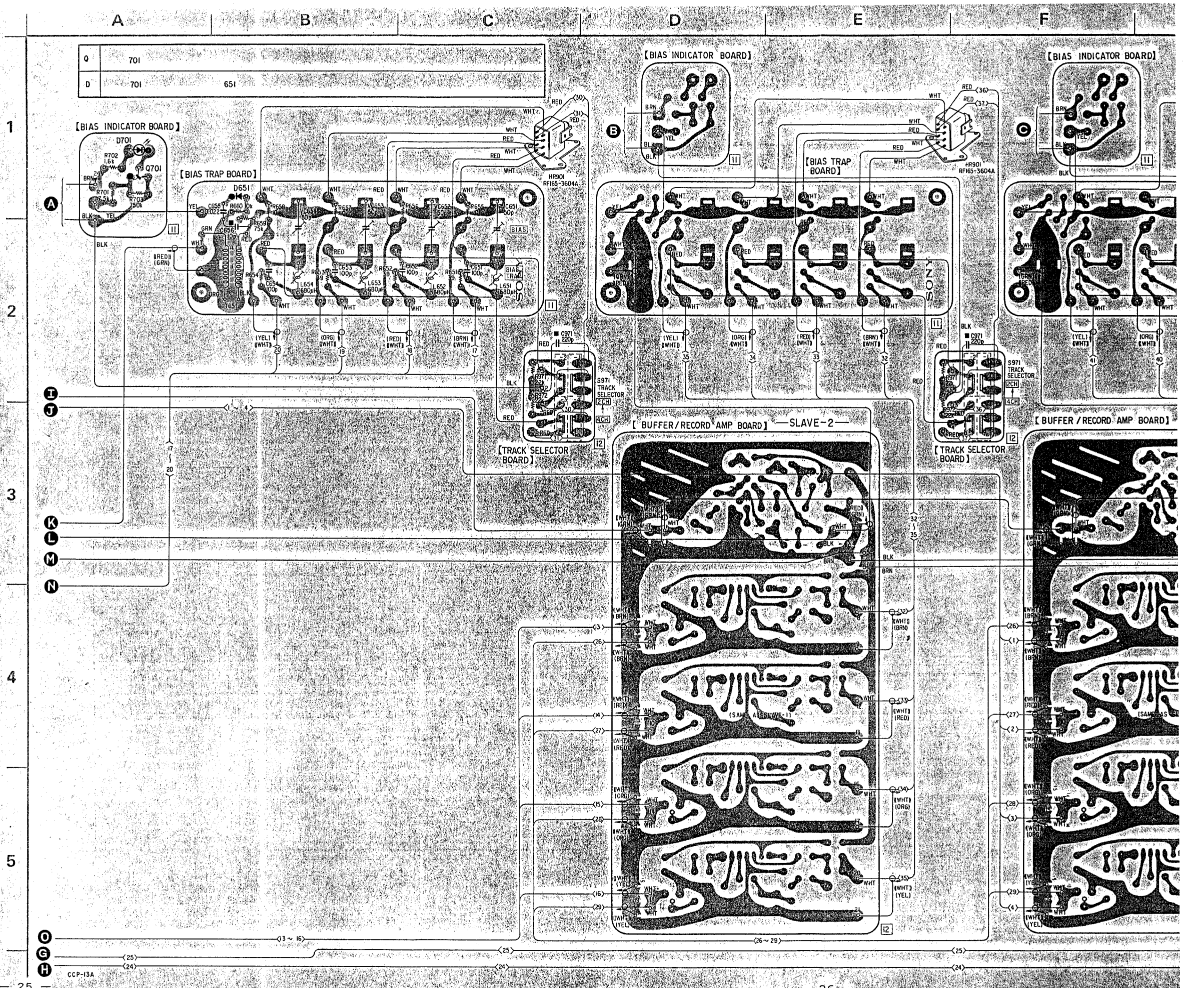


anode
cathode
anode
cathode

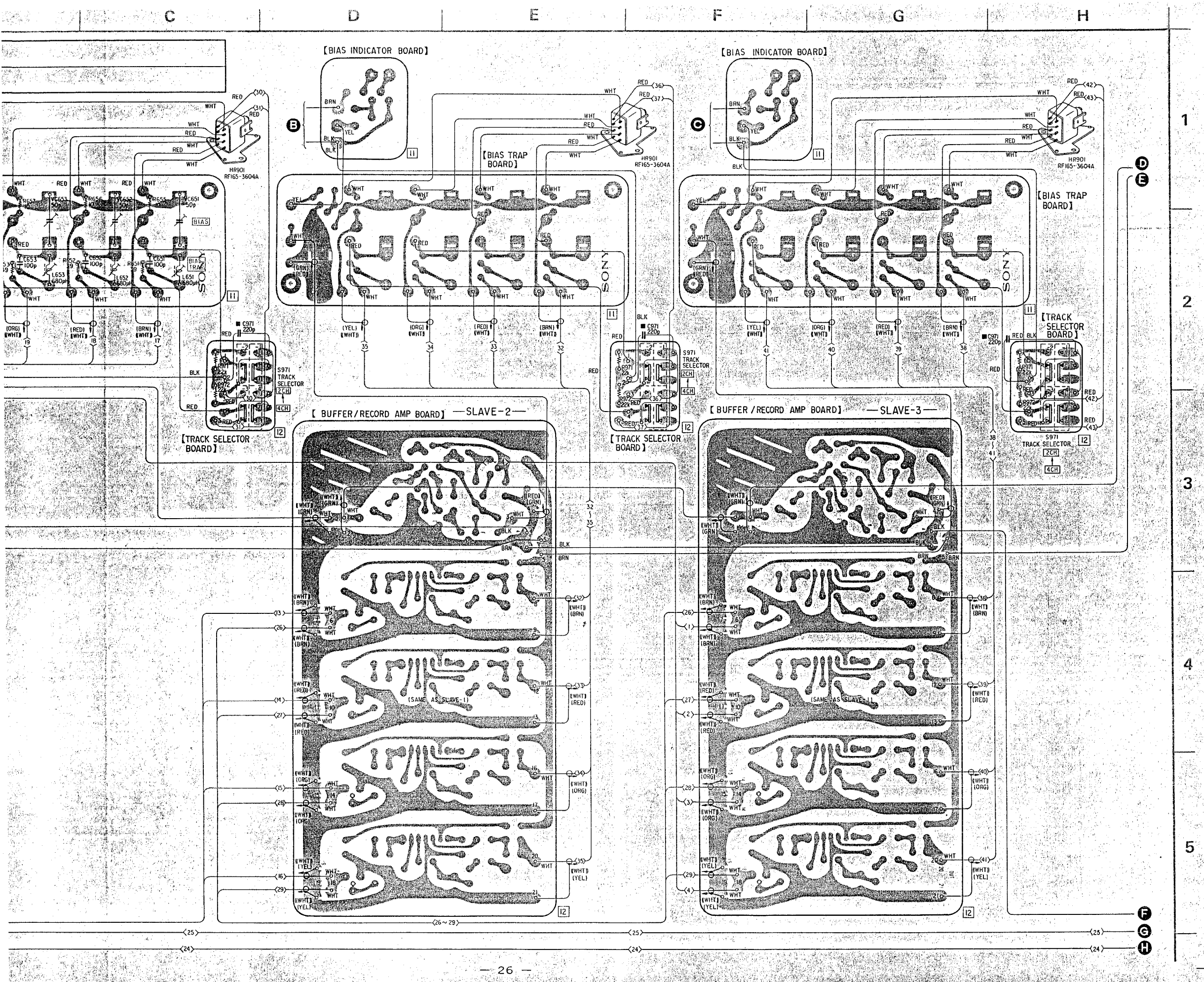
Note:
- ■ : part mounted on the conductor side.
- ▨ : B+ pattern.
- Color code of sleeving over the end of the jacket.



WHT
RED
(RED)(GRY)



A
B
C
D
E
F
1
2
3
4
5
Q 701
D 701 651
[BIAS INDICATOR BOARD]
D701
R702 1.6k
Q701
R701
R703 750k
[BIAS TRAP BOARD]
D651
C658
R660
R659 75k
C656
C657
R658
R657
R656
R655
C654 50p
C653 50p
C652 50p
C651 50p
R654
R653
R652
R651
C655 100p
C653 100p
C652 100p
C651 100p
L654 680μ
L653 680μ
L652 680μ
L651 680μ
BIAS
BIAS TRAP
SONY
HR901 RF165-3604A
C971 220p
S971 TRACK SELECTOR
2CH
4CH
[TRACK SELECTOR BOARD]
[BIAS INDICATOR BOARD]
[BIAS TRAP BOARD]
[BUFFER/RECORD AMP BOARD] —SLAVE-2—
[BUFFER/RECORD AMP BOARD]
(SAME AS SLAVE-1)
WHT
RED
BLK
BRN
YEL
GRN
ORG
(YEL) (WHT) 20
(ORG) (WHT) 19
(RED) (WHT) 18
(BRN) (WHT) 17
(YEL) (WHT) 35
(ORG) (WHT) 34
(RED) (WHT) 33
(BRN) (WHT) 32
(YEL) (WHT) 41
(ORG) (WHT) 40
(30)
(31)
(36)
(37)
A
B
C
I
J
K
L
M
N
O
G
H
(13)
(26)
(14)
(27)
(15)
(28)
(16)
(29)
(32)
(33)
(34)
(35)
(1)
(2)
(3)
(4)
(13 ~ 16)
(26 ~ 29)
(25)
(24)
11
12
CCP-13A

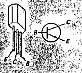

C
D
E
F
G
H
1
2
3
4
5
[BIAS INDICATOR BOARD]
[BIAS INDICATOR BOARD]
B
C
D
E
F
G
H
HR901
RF165-3604A
HR901
RF165-3604A
HR901
RF165-3604A
[BIAS TRAP BOARD]
[BIAS TRAP BOARD]
BIAS
BIAS TRAP
SONY
SONY
R657
C653 50p
R656
C652 50p
R655
C651 50p
C653 100p
L653 680μH
C652 100p
L652 680μH
C651 100p
L651 680μH
C971 220p
R971 22k
R972 22k
S971 TRACK SELECTOR
2CH
4CH
[TRACK SELECTOR BOARD]
[TRACK SELECTOR BOARD]
[TRACK SELECTOR BOARD]
[BUFFER/RECORD AMP BOARD] —SLAVE-2—
[BUFFER/RECORD AMP BOARD] —SLAVE-3—
(SAME AS SLAVE-1)
(SAME AS SLAVE-1)
WHT
RED
BLK
BRN
YEL
(ORG) (WHT)
(RED) (WHT)
(BRN) (WHT)
(YEL) (WHT)
(WHT) (GRN)
(WHT) (BRN)
(WHT) (RED)
(WHT) (ORG)
(WHT) (YEL)
(RED) (GRN)
11
12
(26~29)
(25)
(24)

4-5. MOUNTING DIAGRAMS – Mechanism Control, Bias Osc/System Circuit Board (CCP-13A) –

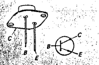
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

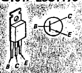
Q1–3, Q6–10, Q12–15, Q103, Q105, 106, Q801–805, Q807: 2SC634A



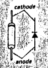
Q806, 808: 2SD291



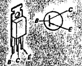
Q101: 2SC1173



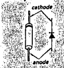
D1–7, 9, D15–21, D23–28, D33–35, D801, D803–807, D810–811, D815, 816: 1S1555 (1T40)

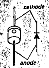

cathode
anode

Q102: 2SA473

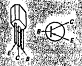


D30, D101, 102, D802, D808, 809: 10E2 (10D2)

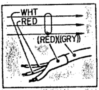

cathode
anode

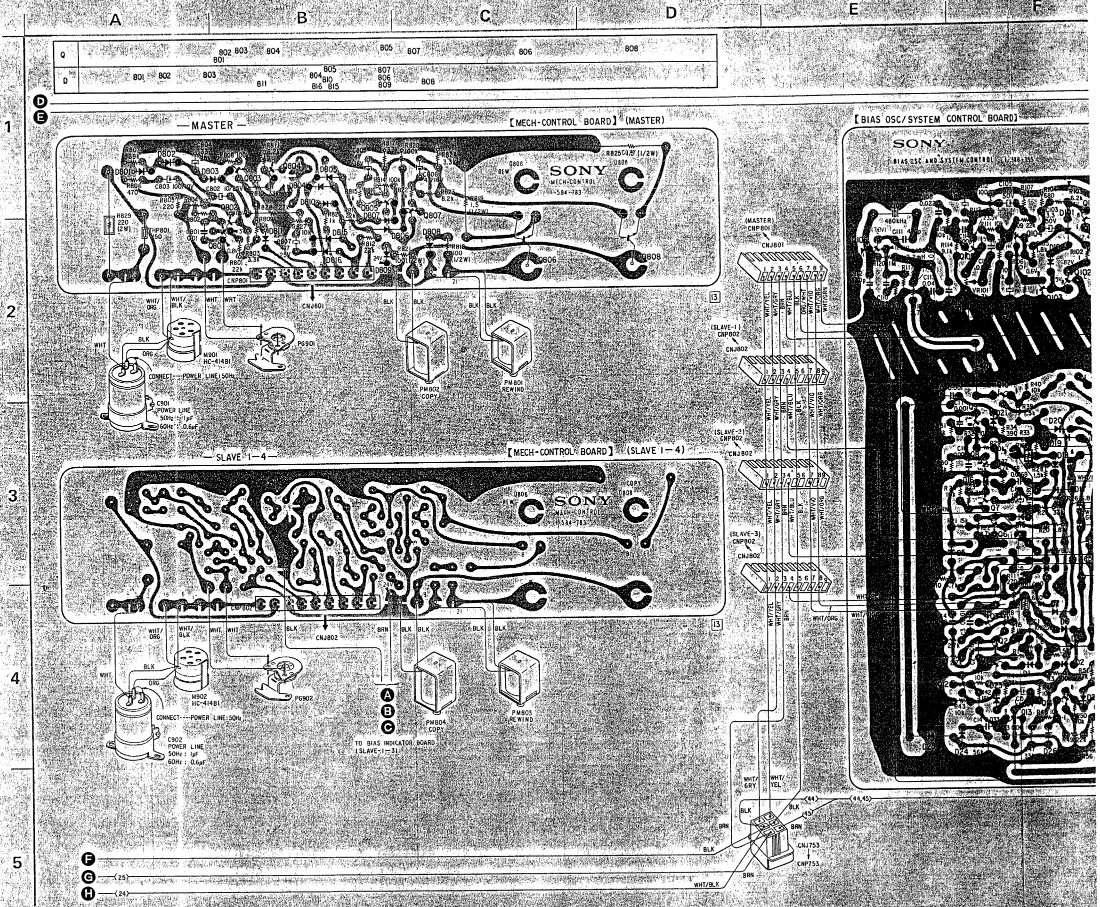

cathode
anode

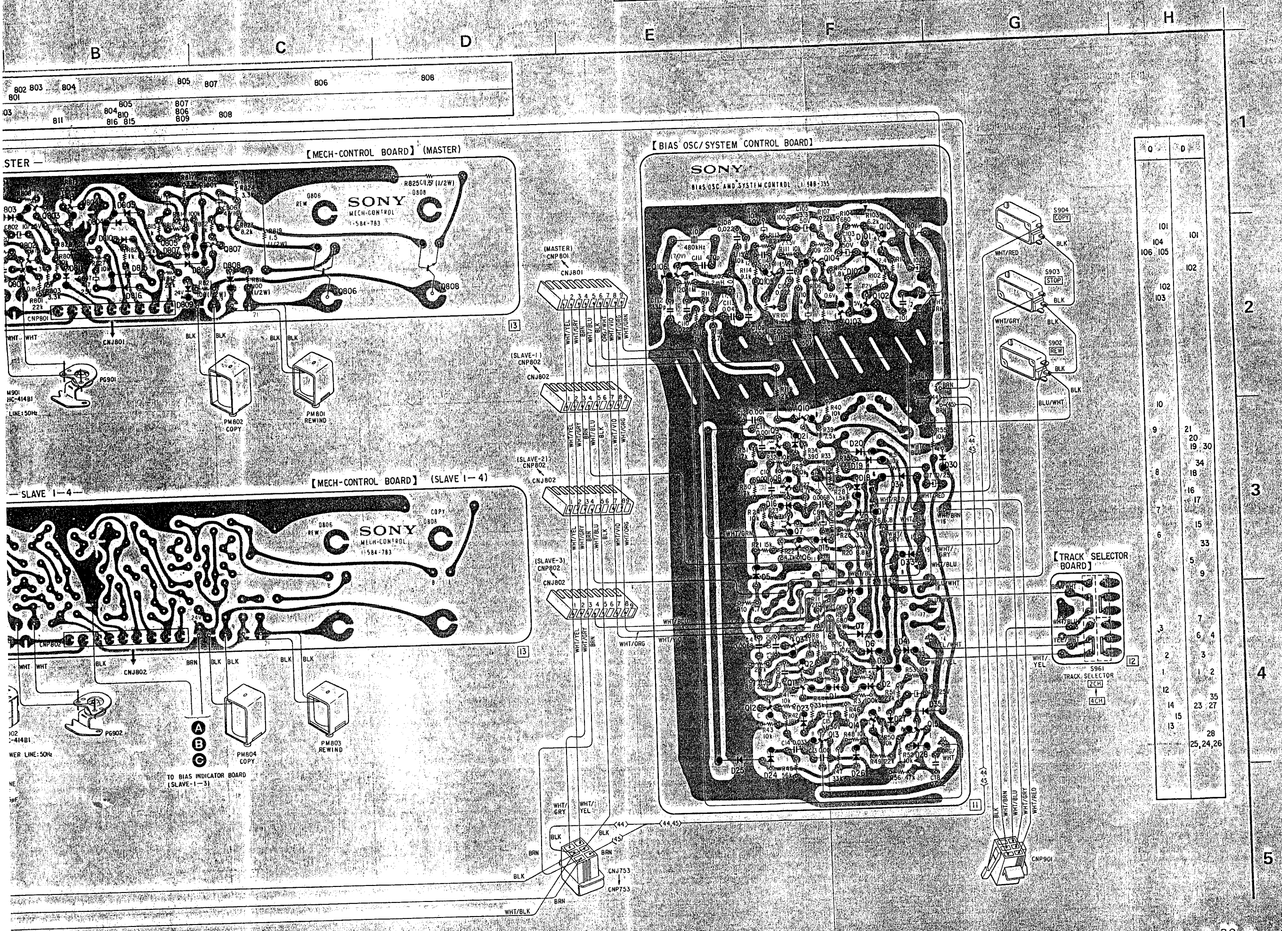
Q104: 2SA678



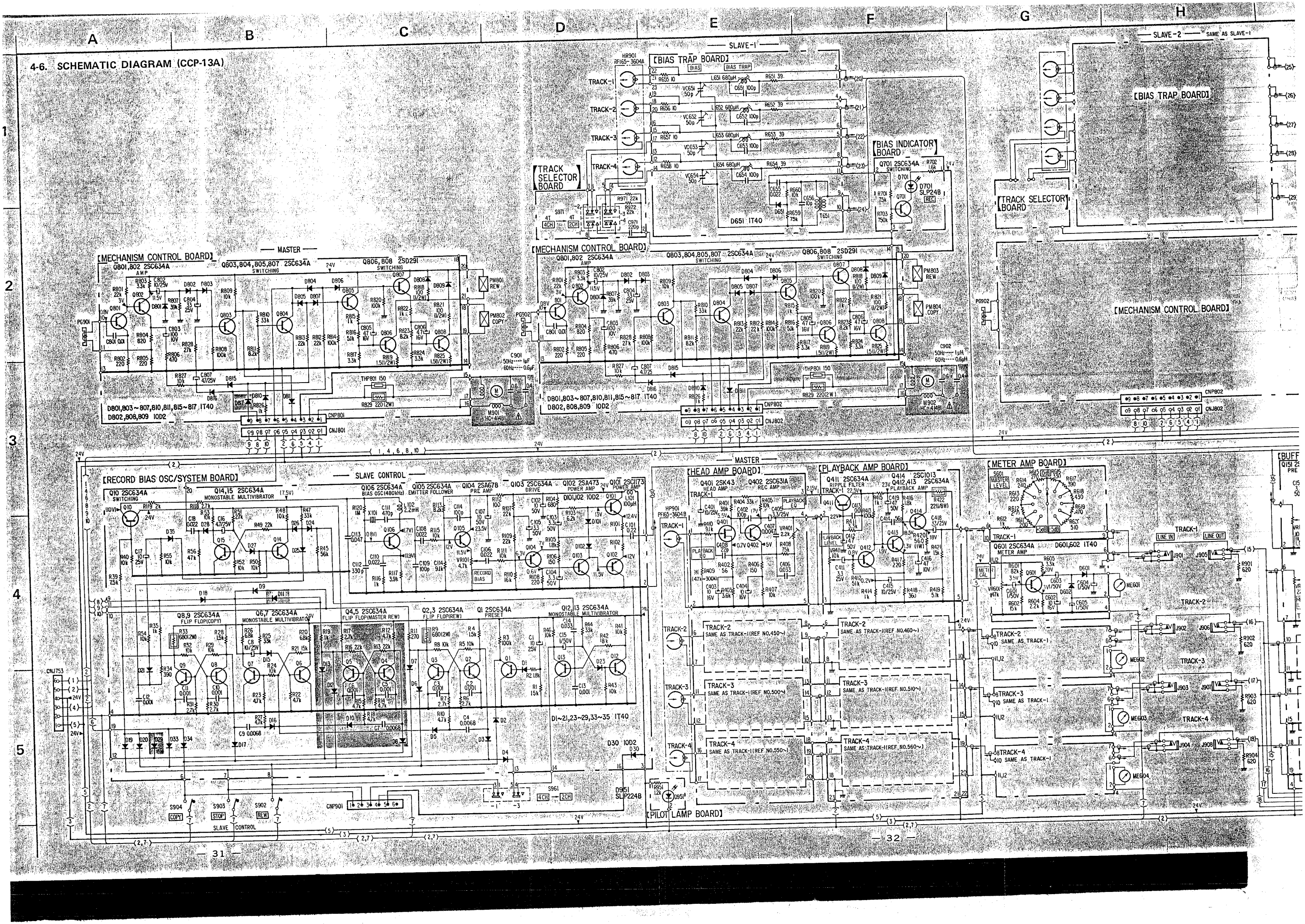
Note:
- ■ : part mounted on the conductor side.
- ▬ : B+ pattern.
- Color code of sleeving over the end of the jacket.

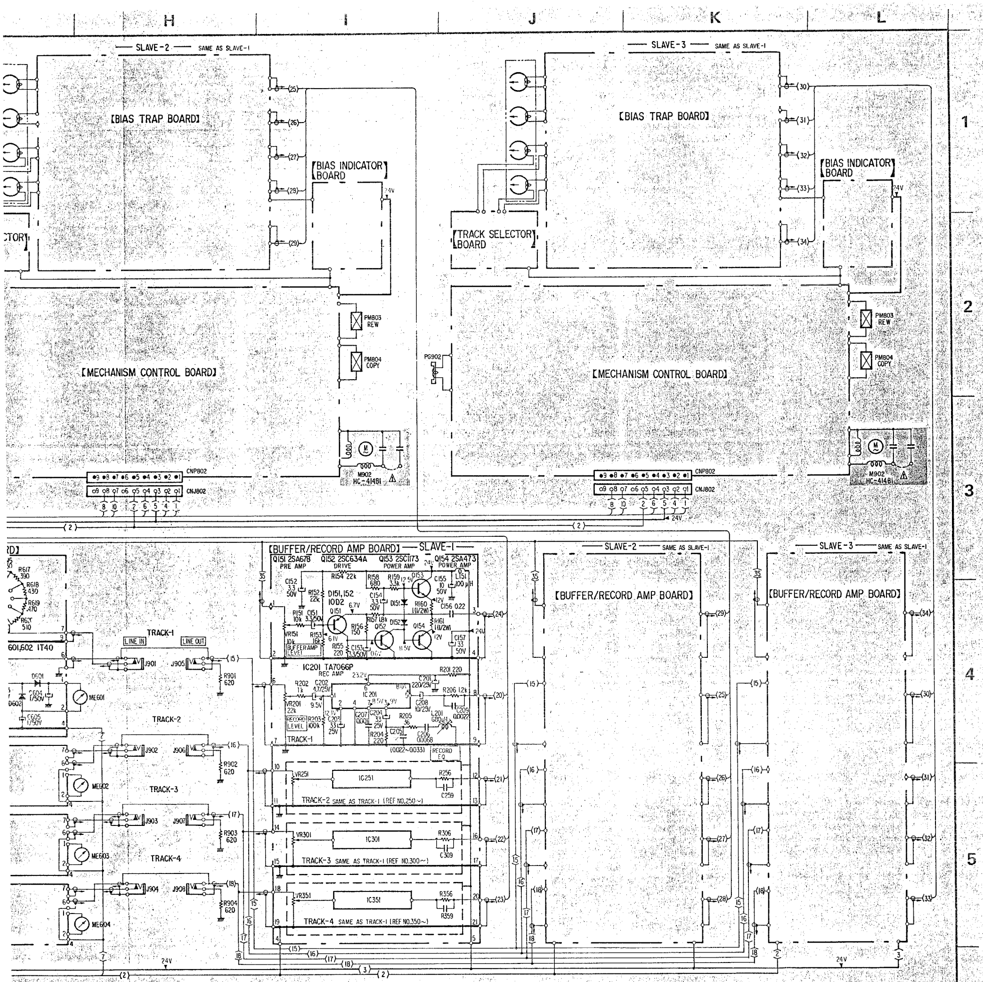

WHT
RED
(RED)((GRY))


A
B
C
D
E
F
1
2
3
4
5
Q
D
801
802
803
804
805
806
807
808
809
810
811
815
816
D
E
— MASTER —
【MECH-CONTROL BOARD】 (MASTER)
SONY
MECH-CONTROL
1-584-783
REW
Q806
Q808
R825 0.5 (1/2W)
R829 220 (2W)
THP801 150
R806 470
R805 220
C801
C802
C803 100/10V
R801 22k
R803 3.3k
R819 1.5 (1/2W)
R818 100 (1/2W)
CNP801
CNJ801
WHT/ORG
WHT/BLK
WHT
BLK
ORG
M901 HC-414B1
PG901
CONNECT ---- POWER LINE: 50Hz
C901 POWER LINE 50Hz: 1μF 60Hz: 0.6μF
PM802 COPY
PM801 REWIND
13
(MASTER) CNP801
CNJ801
1 2 3 4 5 6 7 8 9
WHT/YEL
WHT/GRY
WHT/BLU
BLK
ORG/WHT
WHT/VIO
WHT/ORG
(SLAVE-1) CNP802
CNJ802
(SLAVE-2) CNP802
CNJ802
(SLAVE-3) CNP802
CNJ802
— SLAVE 1–4 —
【MECH-CONTROL BOARD】 (SLAVE 1–4)
COPY
CNP802
CNJ802
M902 HC-414B1
PG902
CONNECT ---- POWER LINE: 50Hz
C902 POWER LINE 50Hz: 1μF 60Hz: 0.6μF
24V
21
BRN
A
B
C
TO BIAS INDICATOR BOARD (SLAVE-1–3)
PM804 COPY
PM803 REWIND
【BIAS OSC/SYSTEM CONTROL BOARD】
SONY
BIAS OSC AND SYSTEM CONTROL
480kHz
WHT/GRY
WHT/YEL
BLK
BRN
〈44〉
〈45〉
〈44,45〉
CNJ753
CNP753
WHT/BLK
F
G
H
〈25〉
〈24〉


B
C
D
E
F
G
H
1
2
3
4
5
【MECH-CONTROL BOARD】 (MASTER)
【MECH-CONTROL BOARD】 (SLAVE 1－4)
【BIAS OSC/SYSTEM CONTROL BOARD】
【TRACK SELECTOR BOARD】
SONY
MECH-CONTROL
SONY BIAS OSC AND SYSTEM CONTROL
(MASTER) CNP801
CNJ801
(SLAVE-1) CNP802
(SLAVE-2) CNP802
(SLAVE-3) CNP802
CNJ802
PG901
PG902
PM802 COPY
PM801 REWIND
PM804 COPY
PM803 REWIND
M901
LINE: 50Hz
S904 COPY
S903 STOP
S902 REW
S961 TRACK SELECTOR 2CH 4CH
CNP901
CNJ753
CNP753
TO BIAS INDICATOR BOARD (SLAVE-1－3)
A
B
C
Q
D
WHT/YEL
WHT/GRY
BRN
WHT/BLU
BLK
ORG/WHT
WHT/VIO
WHT/ORG
WHT/RED
WHT/BRN
BLU/WHT
WHT/BLK
WHT
13
11
12

4-6. SCHEMATIC DIAGRAM (CCP-13A)


A
B
C
D
E
F
G
H
1
2
3
4
5
SLAVE-1
SLAVE-2 SAME AS SLAVE-1
MASTER
【BIAS TRAP BOARD】
【TRACK SELECTOR BOARD】
【BIAS INDICATOR BOARD】
Q701 2SC634A SWITCHING
D701 SLP24B
【MECHANISM CONTROL BOARD】
Q801,802 2SC634A AMP
Q803,804,805,807 2SC634A SWITCHING
Q806,808 2SD291 SWITCHING
PM801 REW
PM802 COPY
PM803 REW
PM804 COPY
M901 HC-4481
M902 HC-4481
THP801 150
D801,803~807,810,811,815~817 1T40
D802,808,809 10D2
CNP801
CNJ801
CNP802
CNJ802
【RECORD BIAS OSC/SYSTEM BOARD】
SLAVE CONTROL
Q10 2SC634A SWITCHING
Q14,15 2SC634A MONOSTABLE MULTIVIBRATOR
Q106 2SC634A BIAS OSC(480kHz)
Q105 2SC634A EMITTER FOLLOWER
Q104 2SA678 PRE AMP
Q103 2SC634A DRIVE
Q102 2SA473 POWER AMP
Q101 2SC1173 POWER AMP
D101,102 10D2
RECORD BIAS
Q8,9 2SC634A FLIP FLOP(COPY)
Q6,7 2SC634A MONOSTABLE MULTIVIBRATOR
Q4,5 2SC634A FLIP FLOP(MASTER REW)
Q2,3 2SC634A FLIP FLOP(REW)
Q1 2SC634A PRESET
Q12,13 2SC634A MONOSTABLE MULTIVIBRATOR
D1~21,23~29,33~35 1T40
D30 10D2
S904 COPY
S903 STOP
S902 REW
SLAVE CONTROL
CNP901
CNJ753
S961 4CH 2CH
D951 SLP224B
【PILOT LAMP BOARD】
【HEAD AMP BOARD】
Q401 2SK43 HEAD AMP
Q402 2SC631A REC AMP
HP901 PF165-3604B
TRACK-1
PLAY BACK EQ
【PLAYBACK AMP BOARD】
Q411 2SC634A RIPPLE FILTER
Q412,413 2SC634A
Q414 2SC1013 PLAYBACK AMP
PLAYBACK LEVEL
TRACK-2 SAME AS TRACK-1 (REF NO.450~)
TRACK-2 SAME AS TRACK-1 (REF NO.460~)
TRACK-3 SAME AS TRACK-1 (REF NO.500~)
TRACK-3 SAME AS TRACK-1 (REF NO.510~)
TRACK-4 SAME AS TRACK-1 (REF NO.550~)
TRACK-4 SAME AS TRACK-1 (REF NO.560~)
【METER AMP BOARD】
S601 MASTER LEVEL
Q601 2SC634A METER AMP
D601,602 1T40
METER CAL
ME601
ME602
ME603
ME604
LINE IN
LINE OUT
J901
J902
J903
J904
J905
J906
J907
J908
【BUFF
HR901 PF165-3604A
TRACK-1
TRACK-2
TRACK-3
TRACK-4
D651 1T40
24V


H
I
J
K
L
1
2
3
4
5
SLAVE-2 SAME AS SLAVE-1
SLAVE-3 SAME AS SLAVE-1
[BIAS TRAP BOARD]
[BIAS INDICATOR BOARD]
[TRACK SELECTOR BOARD]
[MECHANISM CONTROL BOARD]
PM803 REW
PM804 COPY
PG902
M902 HC-414BI
CNP802
CNJ802
24V
[BUFFER/RECORD AMP BOARD] SLAVE-1
Q151 2SA678 PRE AMP
Q152 2SC634A DRIVE
Q153 2SC1173 POWER AMP
Q154 2SA473 POWER AMP
R154 22k
C152 3.3 50V
R152 22k
D151,152 10D2
R151 10k
C151 3.3/50V
VR151 10k
BUFFER AMP LEVEL
R153 16k
R155 220
R156 150
C153 3.3/50V
R157 1.8k
R158 680
R159 3.3k
C154 3.3 50V
C155 10 50V
L151 100 μH
R160 1(1/2W)
R161 1(1/2W)
C156 0.22
C157 33 50V
6.7V
6.1V
12.5V
12V
11.5V
0.6V
IC201 TA7066P REC AMP
23.2V
R201 220
R202 1k
C202 4.7/25V
VR201 22k
RECORD LEVEL
R203 100k
C203 33 25V
C201 220/25V
C207 0.001
C204 33 25V
R204 220
C205 (0.022~0.033)
R205 36
C206 0.0068
C208 10/25V
R206 1.2k
C209 0.0022
L201 680μH
RECORD EQ
9.5V
12.1V
8.5V
9V
TRACK-1
TRACK-2 SAME AS TRACK-1 (REF NO.250~)
TRACK-3 SAME AS TRACK-1 (REF NO.300~)
TRACK-4 SAME AS TRACK-1 (REF NO.350~)
VR251
IC251
R256
C259
VR301
IC301
R306
C309
VR351
IC351
R356
R359
[BUFFER/RECORD AMP BOARD]
SLAVE-2 SAME AS SLAVE-1
SLAVE-3 SAME AS SLAVE-1
R617 390
R618 430
R619 470
R620 510
601,602 1T40
D601
D602
C604 1/50V
C605 1/50V
ME601
ME602
ME603
ME604
LINE IN
LINE OUT
J901
J902
J903
J904
J905
J906
J907
J908
R901 620
R902 620
R903 620
R904 620
TRACK-2
TRACK-3
TRACK-4

Note:

- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ※ : selected to yield optimum performance.
- ▬ : B+ bus.
- ☐ : panel designation.
- ☐ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
  ( ) : COPY
- Voltage variations may be noted due to normal production tolerances.
- ▨ : OPTION CIRCUIT for master rewind only.
- Switch

Ref. No.	Switch	Position
S601	MASTER LEVEL	0 dB
S902	REW	OFF
S903	STOP	OFF
S904	COPY	OFF
S971	TRACK SELECTOR	4CH

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

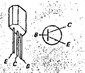
4-7. MOUNTING DIAGRAMS

— Buffer/Record Amp, Bias Trap, Track Selector Circuit Board (CCP-04A) —

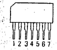
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

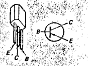
Q152, 701: 2SC634A



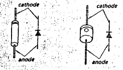
IC201, 251 / IC301, 351 : TA7066P



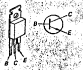
Q151: 2SA678



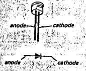
D151, 152: 10E2 (10D2)
D651: 1S1555 (1T40)


cathode
anode
cathode
anode

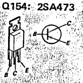
Q153: 2SC1173



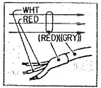
D701: SLP24B
D951: SLP224B

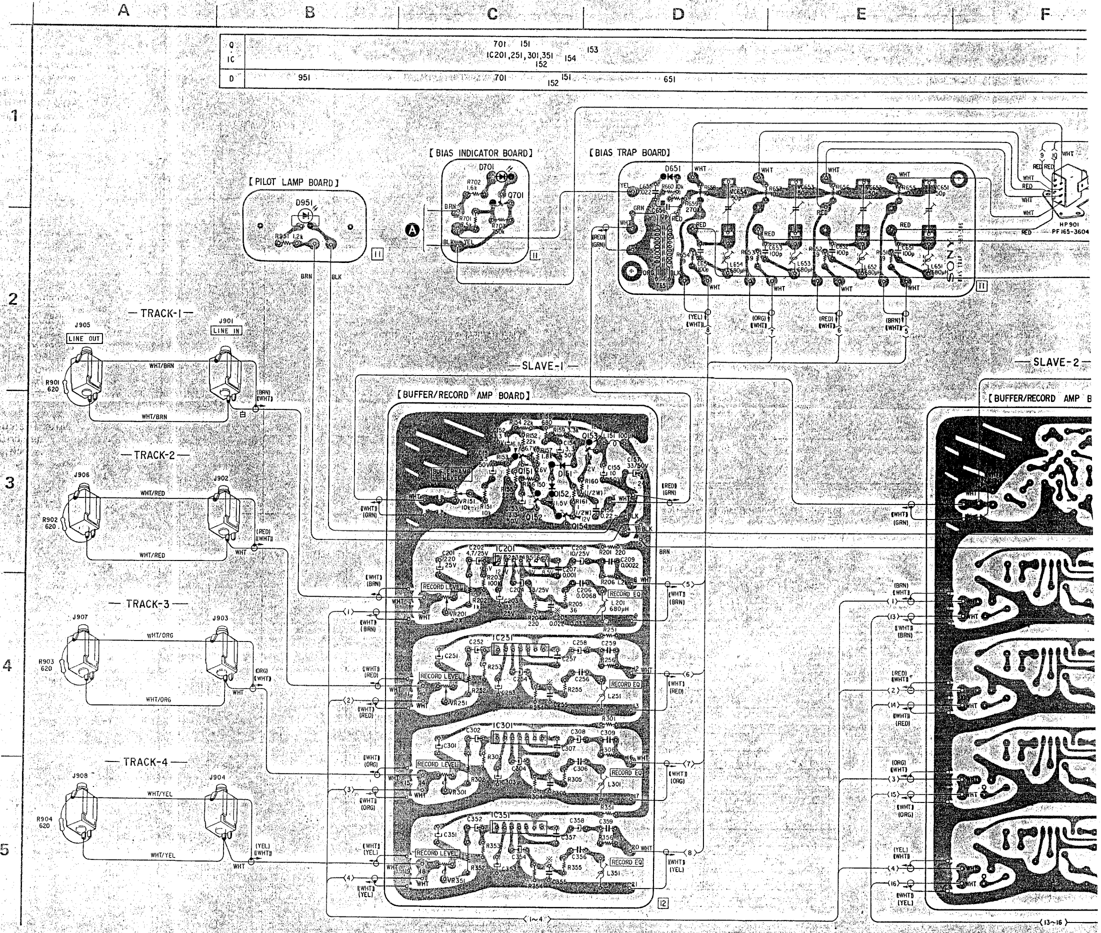

anode
cathode
anode
cathode

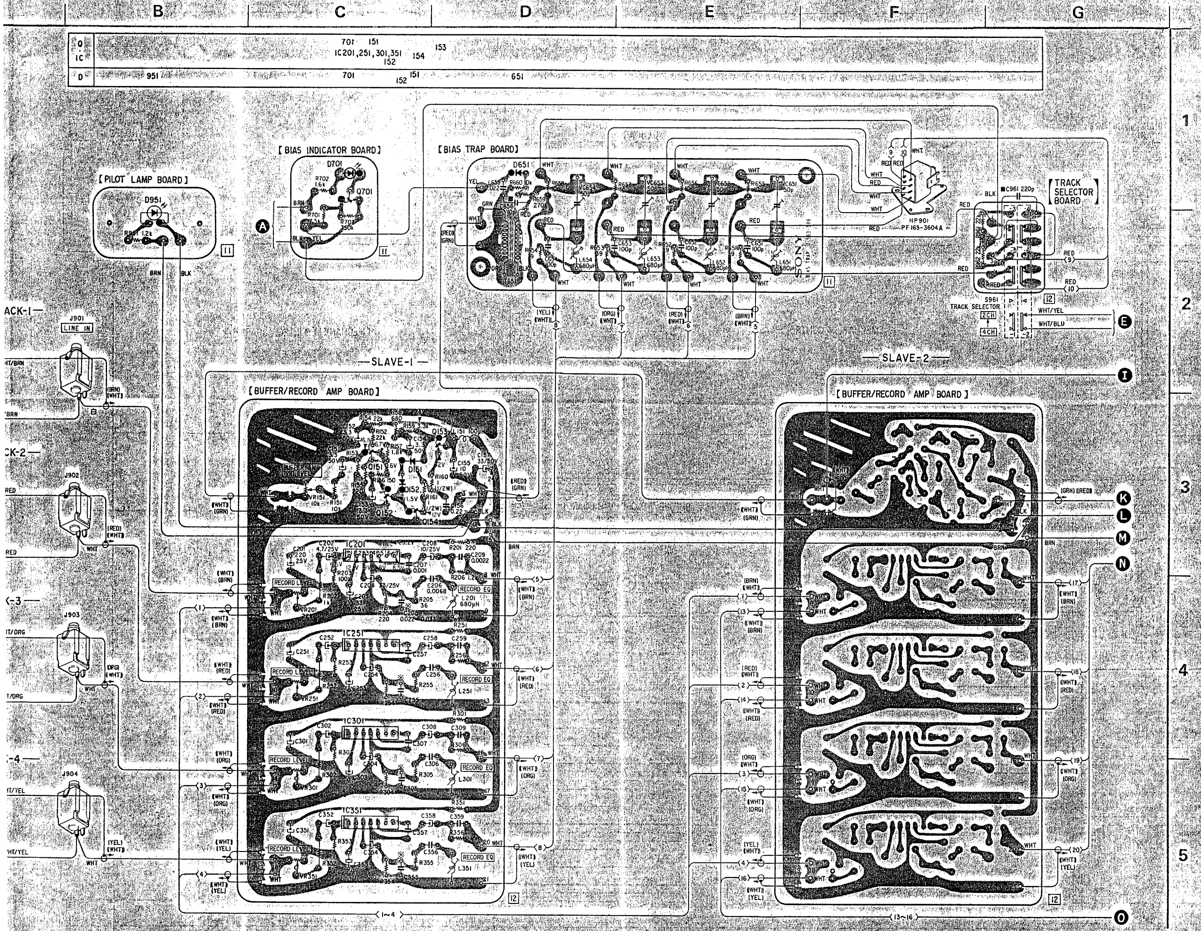
Q154: 2SA473



Note:
- ■ : part mounted on the conductor side.
- ▨ : B+ pattern.
- Color code of sleeving over the end of the jacket.

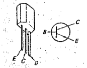

WHT
RED
(RED)((GRY))


A
B
C
D
E
F
1
2
3
4
5
Q
IC
D
701 151 153
IC201,251,301,351 154
152
951
701 151
152
651
[PILOT LAMP BOARD]
D951
R951 1.2k
[BIAS INDICATOR BOARD]
D701
Q701
R702
R701
[BIAS TRAP BOARD]
D651
HP901
PF165-3604
TRACK-1
TRACK-2
TRACK-3
TRACK-4
J905
LINE OUT
J901
LINE IN
J906
J902
J907
J903
J908
J904
R901 620
R902 620
R903 620
R904 620
WHT/BRN
WHT/RED
WHT/ORG
WHT/YEL
SLAVE-1
SLAVE-2
[BUFFER/RECORD AMP BOARD]
[BUFFER/RECORD AMP B
Q151
Q152
Q153
Q154
IC201
IC251
IC301
IC351
RECORD LEVEL
RECORD EQ
VR151
VR201
VR251
VR301
VR351
L201 680µH
L251
L301
L351
(1~4)
(13~16)
A

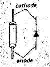

B
C
D
E
F
G
Q
IC
D
701 151
IC201,251,301,351 154 153
152
951
701 152 151
651
1
2
3
4
5
[PILOT LAMP BOARD]
D951
R951 1.2k
[BIAS INDICATOR BOARD]
D701
R702 1.6k
Q701
R701
R703 330k
BRN
BLK
YEL
[BIAS TRAP BOARD]
D651
L655
C655 0.022
R660 10k
R659 270
VC654
VC653
VC652
VC651
L654 680μH
L653 680μH
L652 680μH
L651 680μH
C654
C653 100p
C652 100p
C651 100p
SONY
HP901
PF165-3604A
[TRACK SELECTOR BOARD]
C961 220p
S961
TRACK SELECTOR
2CH
4CH
WHT/YEL
WHT/BLU
RED (9)
RED (10)
J901
LINE IN
J902
J903
J904
WHT/BRN
WHT/ORG
WHT/YEL
(BRN) (WHT)
(RED) (WHT)
(ORG) (WHT)
(YEL) (WHT)
(YEL) (WHT) 8
(ORG) (WHT) 7
(RED) (WHT) 6
(BRN) (WHT) 5
— SLAVE-1 —
— SLAVE-2 —
[BUFFER/RECORD AMP BOARD]
[BUFFER/RECORD AMP BOARD]
IC201
IC251
IC301
IC351
Q151
Q152
Q153
Q154
D151
VR151
VR201
VR251
VR301
VR351
RECORD LEVEL
RECORD EQ
L151 100
L201 680μH
L251
L301
L351
(RED) (GRN)
(WHT) (GRN)
(GRN) (RED)
BRN
BLK
WHT
RED
(1~4)
(13~16)
(17)
(18)
(19)
(20)
A
E
I
K
L
M
N
O
11
12

4-8. MOUNTING DIAGRAMS
— Buffer/Record Amp, Bias Trap, Track Selector Circuit Board (CCP-04A) —

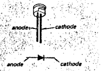
Q701: 2SC634A

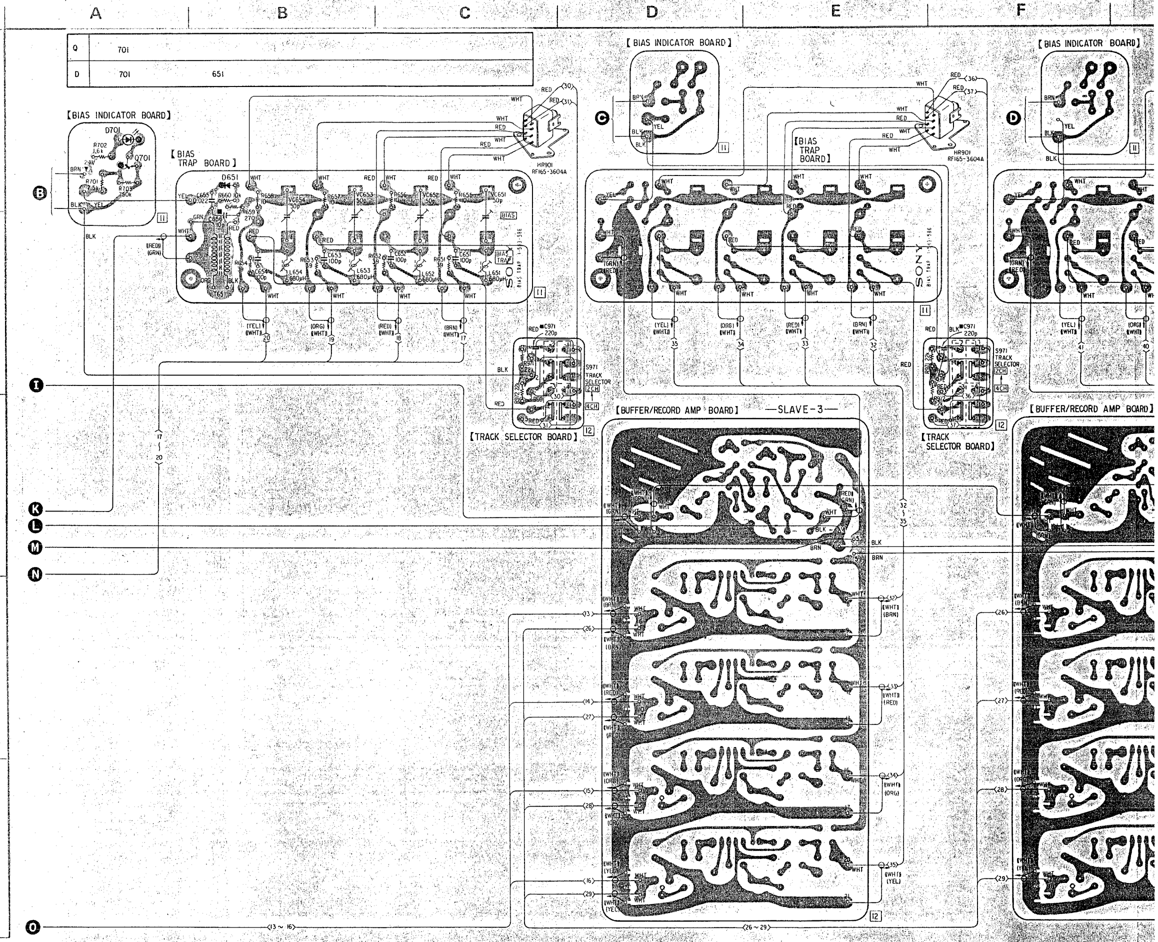


D651: 1S1555 (1T40)


cathode
anode

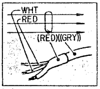
D701: SLP24B

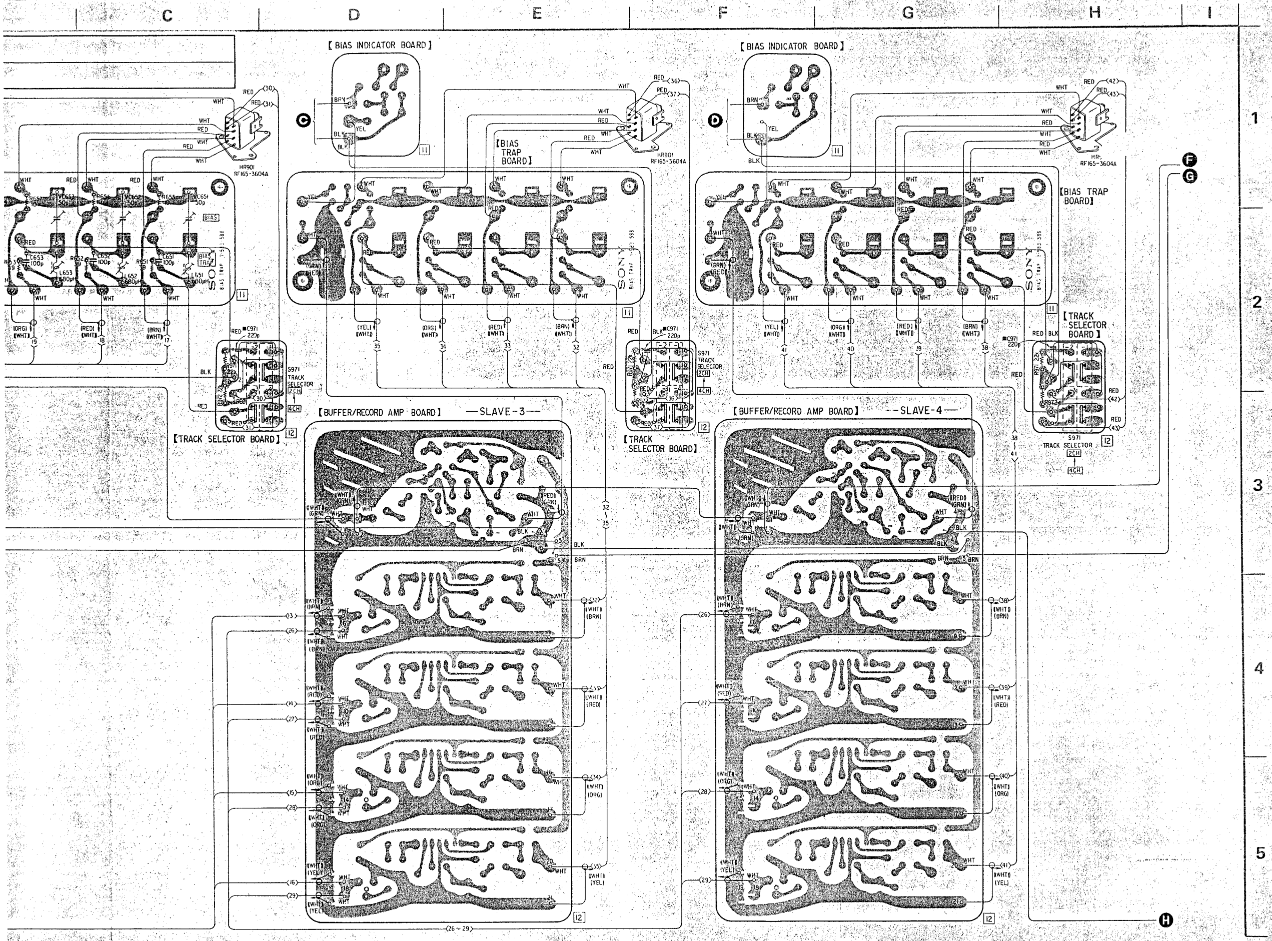

anode
cathode
anode
cathode


A
B
C
D
E
F
1
2
3
4
5
【BIAS INDICATOR BOARD】
D701
R702 1.6k
Q701
2.4V
BRN
R701 7.5k
R703 750k
BLK
YEL
B
【BIAS TRAP BOARD】
D651
C655 0.022
R660 10k
C656 10p
R659 270
T651
R658 10
R657 10
R656 10
R655 10
VC654 50p
VC653 50p
VC652 50p
VC651 50p
R654 39
R653 39
R652 39
R651 39
C654 100p
C653 100p
C652 100p
C651 100p
L654 680μH
L653 680μH
L652 680μH
L651 680μH
BIAS
BIAS TRAP
HR901 RF165-3604A
(YEL) (WHT)
(ORG) (WHT)
(RED) (WHT)
(BRN) (WHT)
20
19
18
17
C
D
C971 220p
R971 22k
R972 22k
S971 TRACK SELECTOR
2CH
4CH
【TRACK SELECTOR BOARD】
【BUFFER/RECORD AMP BOARD】
—SLAVE-3—
I
K
L
M
N
O
17 ~ 20
13 ~ 16
26 ~ 29
32 ~ 35
WHT
RED
BLK
BRN
YEL
GRN
ORG

Q	701	
D	701	651

Note:
- ■ : part mounted on the conductor side.
- ▨ : B+ pattern.
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)
(GRY)

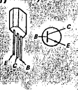

C
D
E
F
G
H
I
1
2
3
4
5
【BIAS INDICATOR BOARD】
【BIAS INDICATOR BOARD】
【BIAS TRAP BOARD】
【BIAS TRAP BOARD】
【TRACK SELECTOR BOARD】
【TRACK SELECTOR BOARD】
【TRACK SELECTOR BOARD】
【BUFFER/RECORD AMP BOARD】
—SLAVE-3—
【BUFFER/RECORD AMP BOARD】
--SLAVE-4--
HR901
RF165-3604A
S971
TRACK SELECTOR
2CH
4CH
C971
220p
SONY
VC651
VC652
VC653
50p
C651
C652
C653
100p
L651
L652
L653
680μH
R651
R652
R653
BIAS
C
D
F
G
H
WHT
RED
BLK
BRN
YEL
(ORG)
(RED)
(BRN)
(YEL)
(WHT)
(GRN)
11
12
⟨26~29⟩

4-9. MOUNTING DIAGRAMS – Mechanism Control, Bias Osc/System Circuit Board (CCP-04A) –

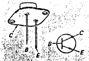
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

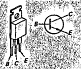
Q1–3, Q6–10, Q103, Q105, 106, Q801–805, Q807 : 2SC634A



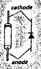
Q806, 808: 2SD291



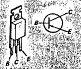
Q101: 2SC1173



D1–3, D5–7, 9, D15–20, D31–34, D801, D803–807, D810, 811, D815, 816 : 1S1555 (1T40)

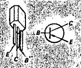

cathode
anode

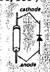
Q102: 2SA473

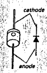


D101, 102, D802, D808, 809 : 10E2 (10D2)

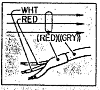
Q104: 2SA678

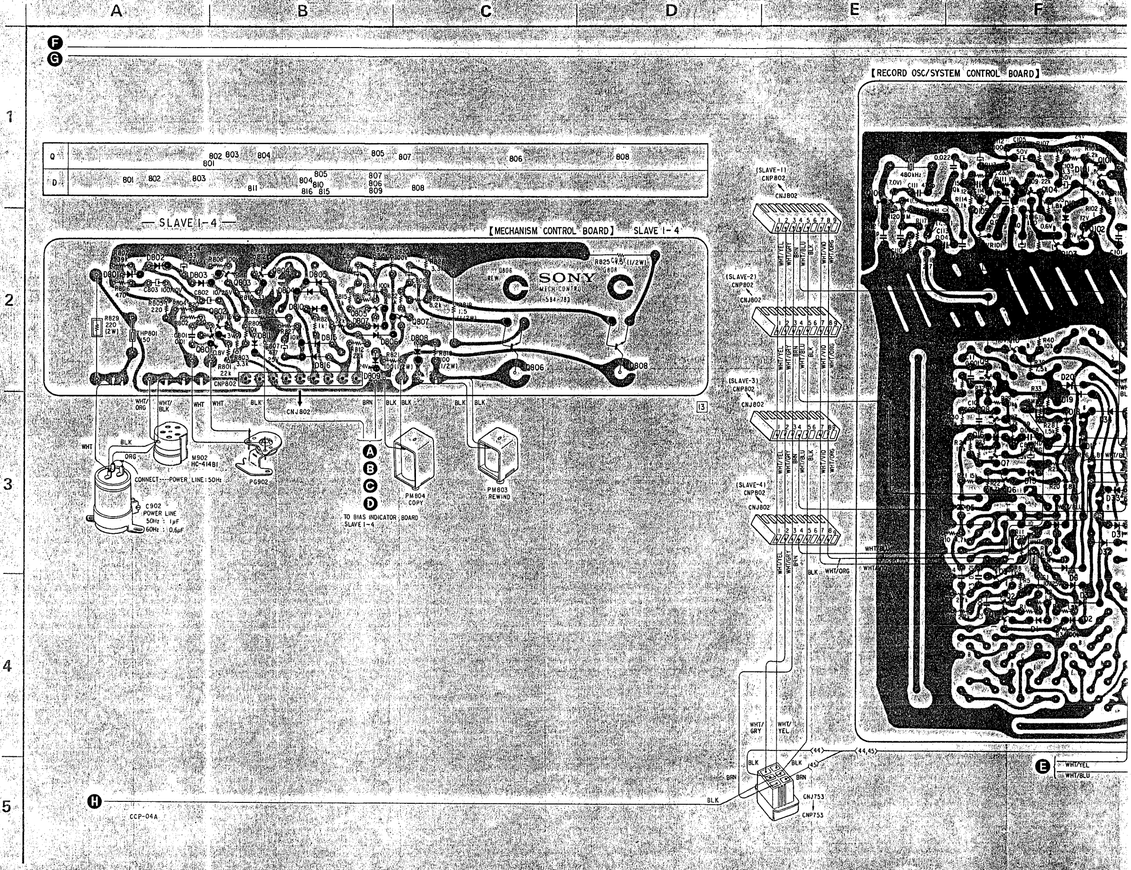


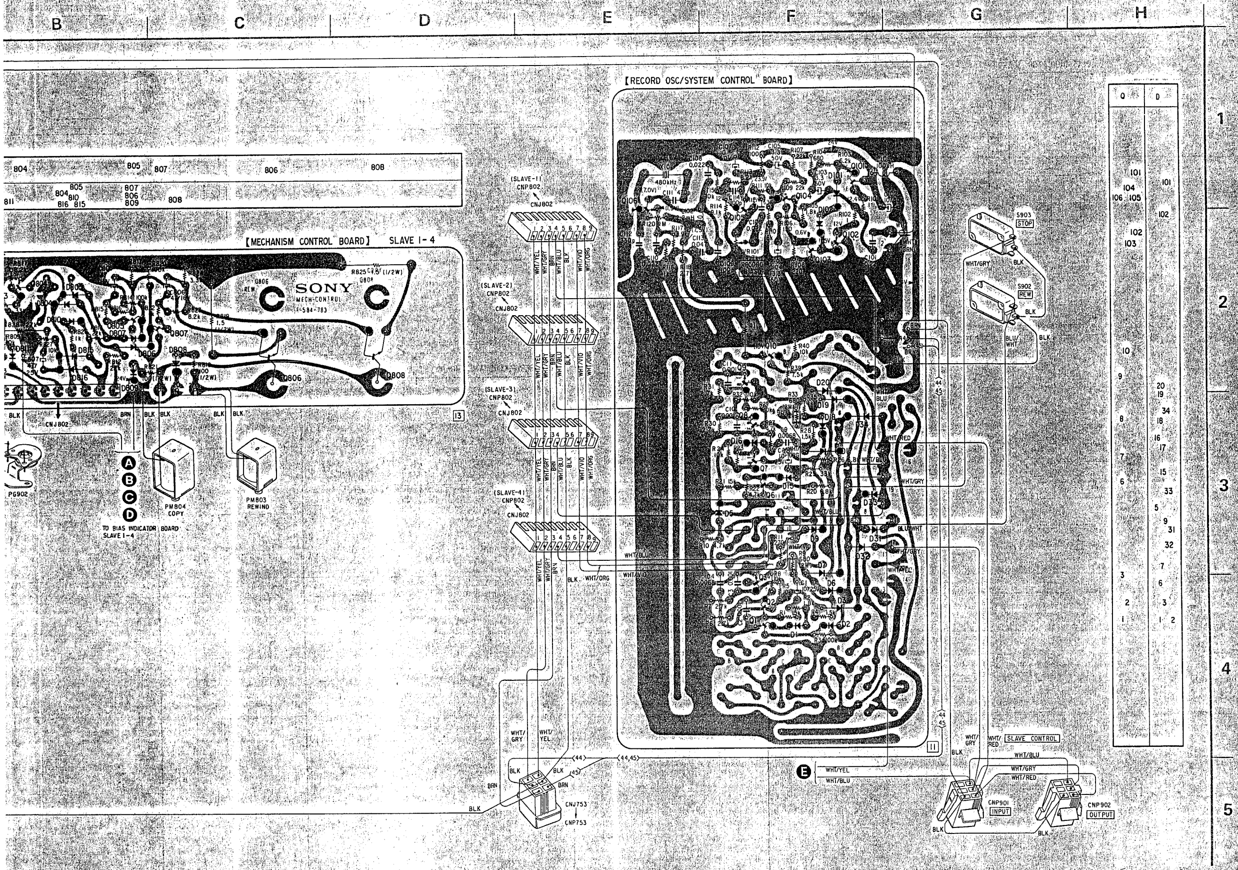

cathode
anode


cathode
anode

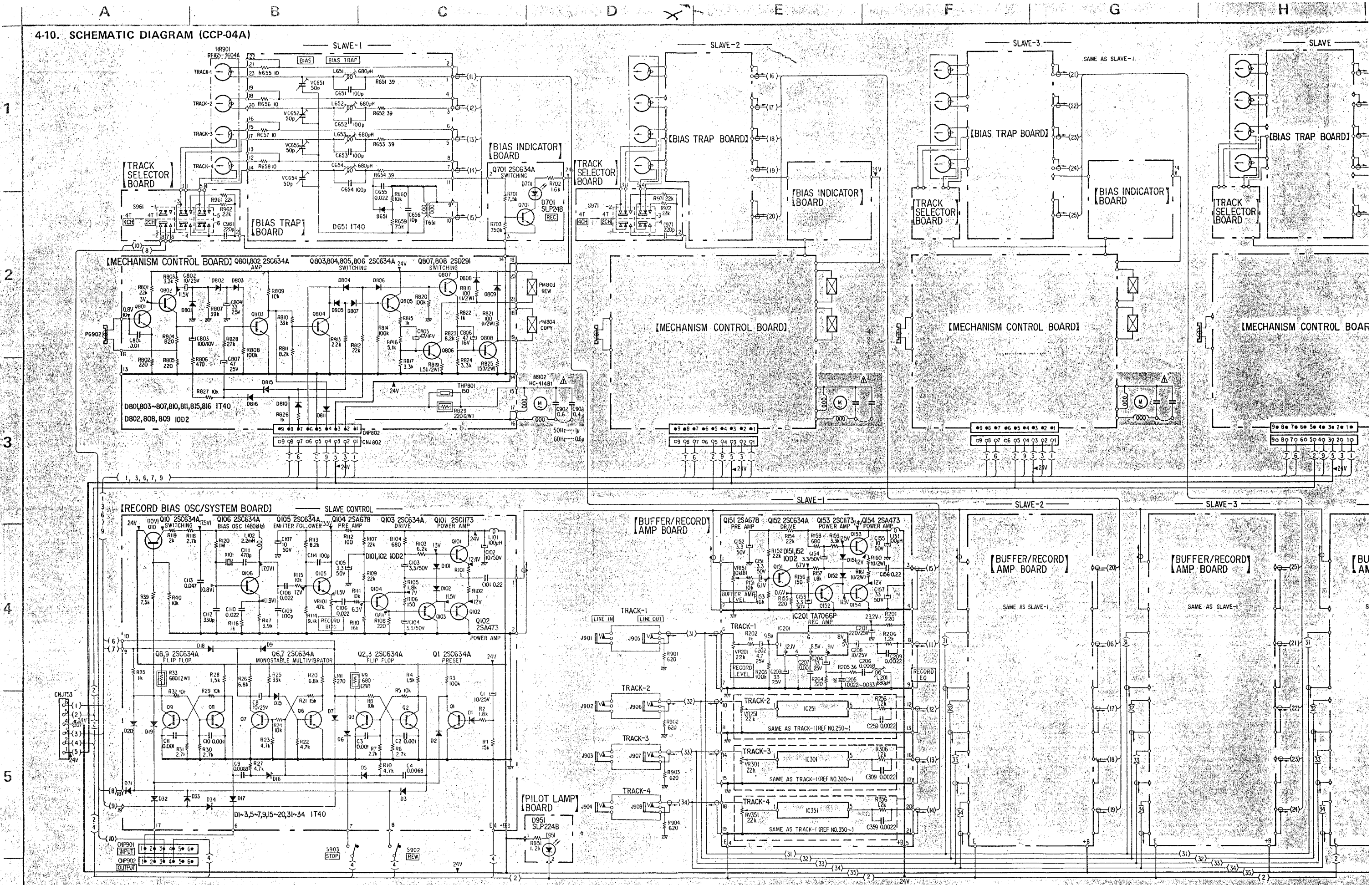
Note:
- ■ : part mounted on the conductor side.
- ▬ : B+ pattern.
- Color code of sleeving over the end of the jacket.

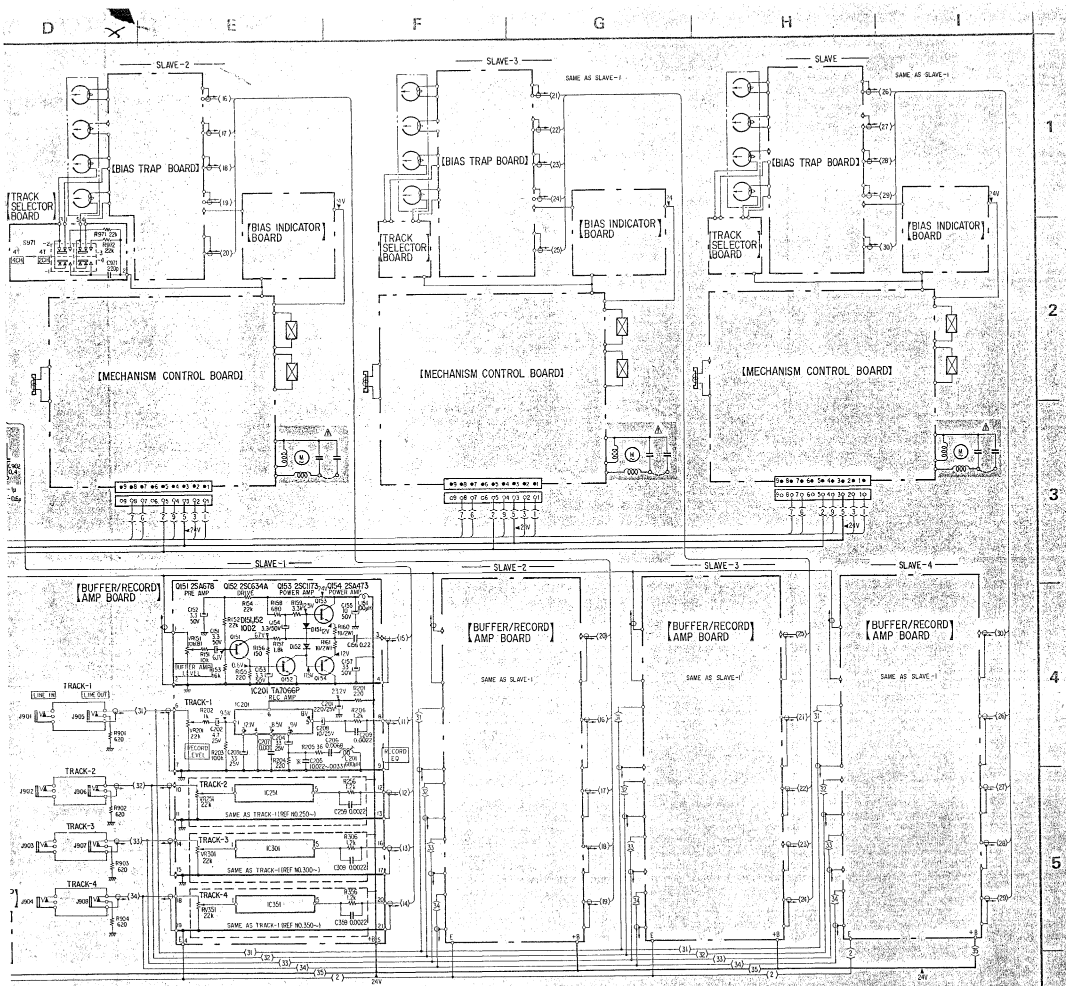

WHT
RED
(RED)
(GRY)


A
B
C
D
E
F
1
2
3
4
5
F
G
H
E
Q
D
802 801 803 804 805 807 806 808
801 802 803 811 804 805 810 816 815 807 806 809 808
— SLAVE 1-4 —
【MECHANISM CONTROL BOARD】 SLAVE 1-4
SONY
MECH CONTROL
R825 CO.5Ω (1/2W)
CNP802
CNJ802
WHT/ORG
WHT/BLK
WHT
WHT
BLK
BRN
BLK
BLK
BLK
BLK
BLK
ORG
M902
HC-414B1
CONNECT----POWER LINE : 50Hz
C902
POWER LINE
50Hz : 1μF
60Hz : 0.6μF
PG902
A
B
C
D
TO BIAS INDICATOR BOARD
SLAVE 1-4
PM804
COPY
PM803
REWIND
13
(SLAVE-1) CNP802 CNJ802
(SLAVE-2) CNP802 CNJ802
(SLAVE-3) CNP802 CNJ802
(SLAVE-4) CNP802 CNJ802
1 2 3 4 5 6 7 8 9
WHT/YEL
WHT/GRY
BRN
WHT/BLU
BLK
WHT/VIO
WHT/ORG
【RECORD OSC/SYSTEM CONTROL BOARD】
WHT/GRY
WHT/YEL
BLK
BLK
BRN
BRN
BLK
(44)
(45)
(44, 45)
CNJ753
CNP753
WHT/YEL
WHT/BLU
CCP-04A


B
C
D
E
F
G
H
1
2
3
4
5
【MECHANISM CONTROL BOARD】 SLAVE 1-4
SONY
MECH-CONTROL
【RECORD OSC/SYSTEM CONTROL BOARD】
(SLAVE-1) CNP802
CNJ802
(SLAVE-2) CNP802
CNJ802
(SLAVE-3) CNP802
CNJ802
(SLAVE-4) CNP802
CNJ802
WHT/YEL
WHT/GRY
BRN
WHT/BLU
BLK
WHT/VIO
WHT/ORG
PG902
PM804 COPY
PM803 REWIND
TO BIAS INDICATOR BOARD SLAVE 1-4
A
B
C
D
E
S903 STOP
S902 REW
BLU/WHT
WHT/RED
CNJ753
CNP753
CNP901 INPUT
CNP902 OUTPUT
SLAVE CONTROL
13
11
Q
D

4-10. SCHEMATIC DIAGRAM (CCP-04A)


A
B
C
D
E
F
G
H
1
2
3
4
5
SLAVE-1
SLAVE-2
SLAVE-3
SLAVE
HR901 RF165-3604A
TRACK-1
TRACK-2
TRACK-3
TRACK-4
BIAS
BIAS TRAP
[TRACK SELECTOR BOARD]
[BIAS TRAP BOARD]
[BIAS INDICATOR BOARD]
Q701 2SC634A SWITCHING
D701 SLP24B
REC
D651 1T40
S961
4CH
2CH
[MECHANISM CONTROL BOARD]
Q801,802 2SC634A AMP
Q803,804,805,806 2SC634A SWITCHING
Q807,808 2SD291 SWITCHING
PM803 REW
PM804 COPY
PG902
M902 HC-414B1
THP801
D801,803~807,810,811,815,816 1T40
D802,808,809 10D2
CNP802
CNJ802
50Hz
60Hz
1, 3, 6, 7, 9
SAME AS SLAVE-1
[RECORD BIAS OSC/SYSTEM BOARD]
SLAVE CONTROL
Q10 2SC634A SWITCHING
Q106 2SC634A BIAS OSC (480kHz)
Q105 2SC634A EMITTER FOLLOWER
Q104 2SA678 PRE AMP
Q103 2SC634A DRIVE
Q101 2SC1173 POWER AMP
Q102 2SA473 POWER AMP
D101,102 10D2
RECORD BIAS
Q8,9 2SC634A FLIP FLOP
Q6,7 2SC634A MONOSTABLE MULTIVIBRATOR
Q2,3 2SC634A FLIP FLOP
Q1 2SC634A PRESET
D1~3,5~7,9,15~20,31~34 1T40
CNJ753
CNP901 INPUT
CNP902 OUTPUT
S903 STOP
S902 REW
24V
[PILOT LAMP BOARD]
D951 SLP224B
R951 1.2k
[BUFFER/RECORD AMP BOARD]
Q151 2SA678 PRE AMP
Q152 2SC634A DRIVE
Q153 2SC1173 POWER AMP
Q154 2SA473 POWER AMP
D151,152 10D2
BUFFER AMP LEVEL
IC201 TA7066P REC AMP
RECORD LEVEL
RECORD EQ
LINE IN
LINE OUT
J901
J905
J902
J906
J903
J907
J904
J908
IC251
IC301
IC351
SAME AS TRACK-1 (REF NO.250~)
SAME AS TRACK-1 (REF NO.300~)
SAME AS TRACK-1 (REF NO.350~)


D
E
F
G
H
I
1
2
3
4
5
SLAVE-2
SLAVE-3
SLAVE
SAME AS SLAVE-1
[BIAS TRAP BOARD]
[BIAS INDICATOR BOARD]
[TRACK SELECTOR BOARD]
[MECHANISM CONTROL BOARD]
S971
4CH
2CH
R971 22k
R972 22k
C971 220p
24V
SLAVE-1
SLAVE-2
SLAVE-3
SLAVE-4
[BUFFER/RECORD AMP BOARD]
Q151 2SA678 PRE AMP
Q152 2SC634A DRIVE
Q153 2SC1173 POWER AMP
Q154 2SA473 POWER AMP
D151,152 10D2
BUFFER AMP LEVEL
IC201 TA7066P REC AMP
TRACK-1
TRACK-2
TRACK-3
TRACK-4
RECORD LEVEL
RECORD EQ
IC251
IC301
IC351
SAME AS TRACK-1 (REF NO.250~)
SAME AS TRACK-1 (REF NO.300~)
SAME AS TRACK-1 (REF NO.350~)
LINE IN
LINE OUT
J901
J902
J903
J904
J905
J906
J907
J908
R901 620
R902 620
R903 620
R904 620
24V

Note:

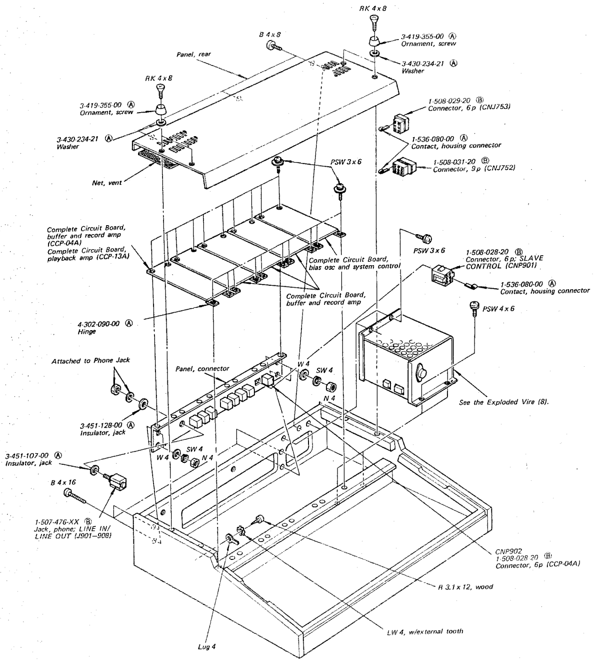
- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated, except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ※ : selected to yield optimum performance.
- ▬ : B+ bus.
- ☐ : panel designation.
- ☐ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
  ( ) : COPY
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S902	REW	OFF
S903	STOP	OFF
S904	COPY	4CH

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

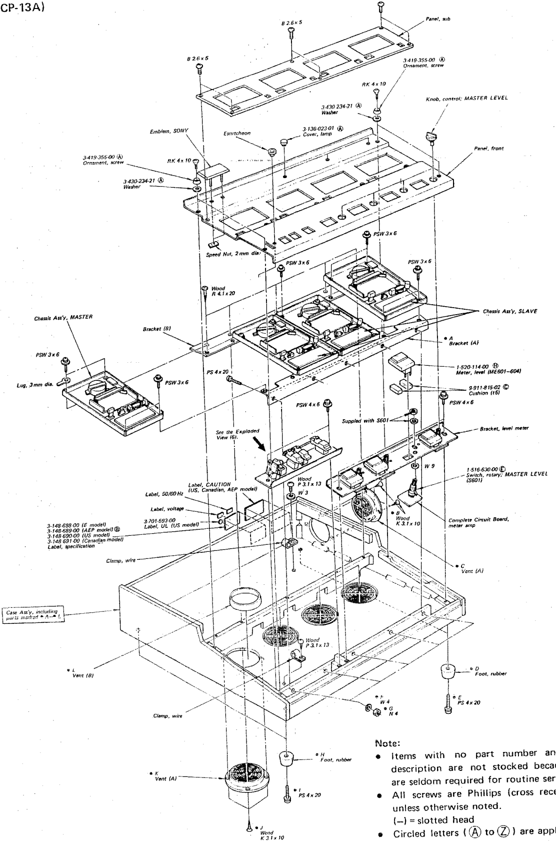
SECTION 5
EXPLODED VIEWS

(1) (CCP-13A/04A)


RK 4 x 8
3-419-355-00 Ⓐ
Ornament, screw
3-430-234-21 Ⓐ
Washer
B 4 x 8
Panel, rear
RK 4 x 8
3-419-355-00 Ⓐ
Ornament, screw
3-430-234-21 Ⓐ
Washer
Net, vent
1-508-029-20 Ⓑ
Connector, 6 p (CNJ753)
1-536-080-00 Ⓐ
Contact, housing connector
1-508-031-20 Ⓑ
Connector, 9 p (CNJ752)
PSW 3 x 6
Complete Circuit Board, buffer and record amp (CCP-04A)
Complete Circuit Board, playback amp (CCP-13A)
Complete Circuit Board, bias osc and system control
Complete Circuit Board, buffer and record amp
PSW 3 x 6
1-508-028-20 Ⓑ
Connector, 6 p; SLAVE CONTROL (CNP901)
1-536-080-00 Ⓐ
Contact, housing connector
PSW 4 x 6
4-302-090-00 Ⓐ
Hinge
Attached to Phone Jack
Panel, connector
W 4
SW 4
N 4
See the Exploded Vire (8).
3-451-128-00 Ⓐ
Insulator, jack
3-451-107-00 Ⓐ
Insulator, jack
W 4
SW 4
N 4
B 4 x 16
1-507-476-XX Ⓑ
Jack, phone; LINE IN/ LINE OUT (J901–908)
CNP902
1-508-028-20 Ⓑ
Connector, 6p (CCP-04A)
R 3.1 x 12, wood
LW 4, w/external tooth
Lug 4

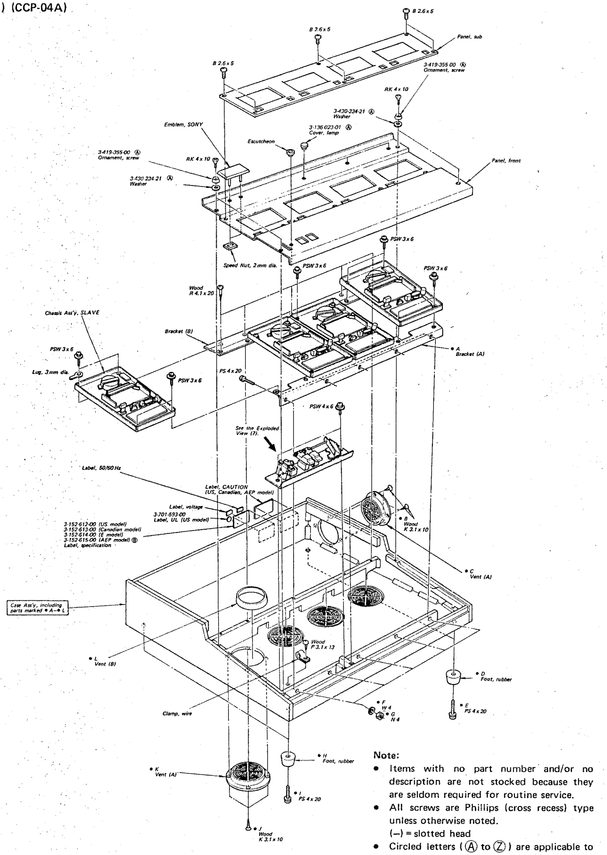
Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

(2) (CCP-13A)


B 2.6 x 5
B 2.6 x 5
B 2.6 x 5
Panel, sub
3-419-355-00 Ⓐ
Ornament, screw
RK 4 x 10
3-430 234-21 Ⓐ
Washer
Knob, control; MASTER LEVEL
Emblem, SONY
Escutcheon
3-136-023-01 Ⓐ
Cover, lamp
Panel, front
3-419-355-00 Ⓐ
Ornament, screw
RK 4 x 10
3-430-234-21 Ⓐ
Washer
Speed Nut, 2 mm dia.
PSW 3 x 6
PSW 3 x 6
PSW 3 x 6
Wood
R 4.1 x 20
Chassis Ass'y, SLAVE
Chassis Ass'y, MASTER
Bracket (B)
• A
Bracket (A)
PSW 3 x 6
Lug, 3 mm dia.
PSW 3 x 6
PS 4 x 20
1-520-114-00 Ⓗ
Meter, level (ME601–604)
9-911-815-02 Ⓒ
Cushion (t5)
PSW 4 x 6
PSW 4 x 6
Suppled with S601
Bracket, level meter
See the Exploded View (6).
W 9
1-516-630-00 Ⓔ
Switch, rotary; MASTER LEVEL (S601)
Wood
P 3.1 x 13
W 3
Label, CAUTION (US, Canadian, AEP model)
Label, 50/60 Hz
Label, voltage
3-701-593-00
Label, UL (US model)
3-148-688-00 (E model)
3-148-689-00 (AEP model) Ⓑ
3-148-690-00 (US model)
3-148 691-00 (Canadian model)
Label, specification
• B
Wood
K 3.1 x 10
Complete Circuit Board, meter amp
Clamp, wire
• C
Vent (A)
Case Ass'y, including parts marked • A–• L
Wood
P 3.1 x 13
• L
Vent (B)
• D
Foot, rubber
• F
W 4
• G
N 4
• E
PS 4 x 20
Clamp, wire
• H
Foot, rubber
• K
Vent (A)
• I
PS 4 x 20
• J
Wood
K 3.1 x 10

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

(3) (CCP-04A)


B 2.6 x 5
B 2.6 x 5
B 2.6 x 5
Panel, sub
3-419-355-00 Ⓐ
Ornament, screw
RK 4 x 10
3-430-234-21 Ⓐ
Washer
3-136-023-01 Ⓐ
Cover, lamp
Emblem, SONY
Escutcheon
3-419-355-00 Ⓐ
Ornament, screw
RK 4 x 10
3-430-234-21 Ⓐ
Washer
Panel, front
Speed Nut, 2 mm dia.
PSW 3 x 6
PSW 3 x 6
PSW 3 x 6
Wood
R 4.1 x 20
Chassis Ass'y, SLAVE
Bracket (B)
● A
Bracket (A)
PSW 3 x 6
Lug, 3 mm dia.
PSW 3 x 6
PS 4 x 20
PSW 4 x 6
See the Exploded View (7).
Label, 50/60 Hz
Label, CAUTION
(US, Canadian, AEP model)
Label, voltage
3-701-593-00
Label, UL (US model)
3-152-612-00 (US model)
3-152-613-00 (Canadian model)
3-152-614-00 (E model)
3-152-615-00 (AEP model) Ⓑ
Label, specification
● B
Wood
K 3.1 x 10
● C
Vent (A)
Case Ass'y, including parts marked ● A–● L
Wood
P 3.1 x 13
● L
Vent (B)
● D
Foot, rubber
● E
PS 4 x 20
Clamp, wire
● F
W 4
● G
N 4
● H
Foot, rubber
● K
Vent (A)
● I
PS 4 x 20
● J
Wood
K 3.1 x 10

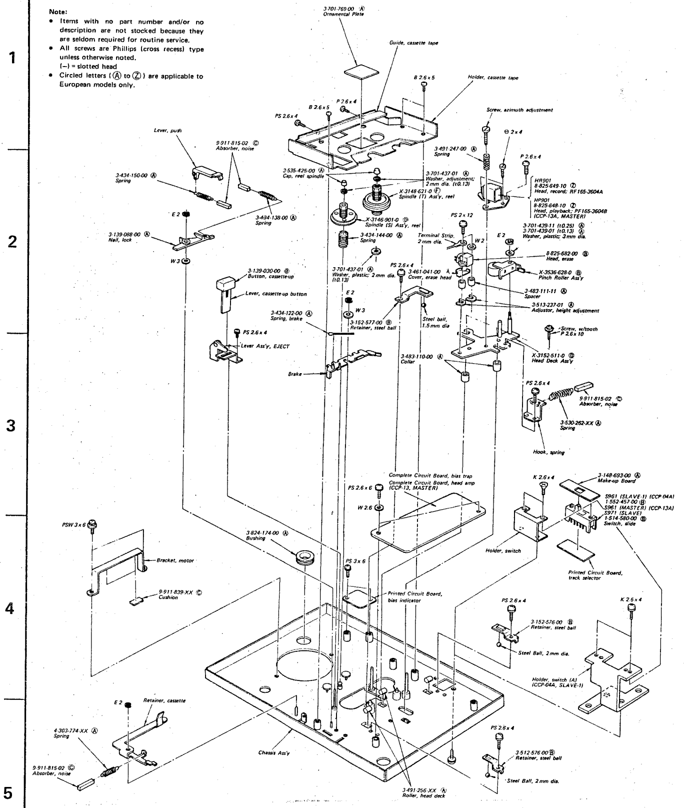
Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

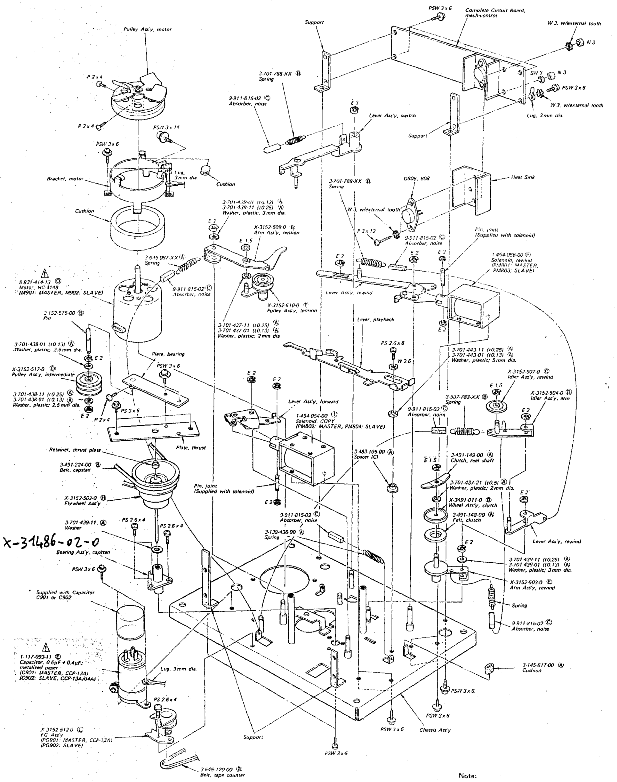
(4) (CCP-13A/04A)

Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.


3-701-769-00 Ⓐ
Ornamental Plate
Guide, cassette tape
B 2.6 x 5
Holder, cassette tape
P 2.6 x 4
B 2.6 x 5
PS 2.6 x 4
Screw, azimuth adjustment
⊖ 2 x 4
P 2.6 x 4
Lever, push
9-911-815-02 Ⓒ
Absorber, noise
3-434-150-00 Ⓐ
Spring
3-491-247-00 Ⓐ
Spring
3-535-425-00 Ⓐ
Cap, reel spindle
3-701-437-01 Ⓐ
Washer, adjustment; 2 mm dia. (t0.13)
X-3148-621-0 Ⓕ
Spindle (T) Ass'y, reel
HR901
8-825-649-10 Ⓩ
Head, record; RF165-3604A
HP901
8-825-648-10 Ⓩ
Head, playback; PF165-3604B
(CCP-13A, MASTER)
E 2
3-434-138-00 Ⓐ
Spring
X-3146-901-0 Ⓓ
Spindle (S) Ass'y, reel
PS 2 x 12
3-701-439-11 (t0.25) Ⓐ
3-701-439-01 (t0.13) Ⓐ
Washer, plastic; 3 mm dia.
3-139-088-00 Ⓐ
Nail, lock
3-434-144-00 Ⓐ
Spring
Terminal Strip, 2 mm dia.
W 2
E 2
W 3
8-825-682-00 Ⓑ
Head, erase
3-701-437-01 Ⓐ
Washer, plastic; 2 mm dia. (t0.13)
PS 2.6 x 4
3-461-041-00 Ⓐ
Cover, erase head
X-3536-628-0 Ⓑ
Pinch Roller Ass'y
3-139-030-00 Ⓑ
Button, cassette-up
E 2
Lever, cassette-up button
3-483-111-11 Ⓐ
Spacer
W 3
3-513-237-01 Ⓐ
Adjustor, height adjustment
3-434-122-00 Ⓐ
Spring, brake
3-152-577-00 Ⓑ
Retainer, steel ball
Steel ball, 1.5 mm dia
Screw, w/tooth
P 2.6 x 10
PS 2.6 x 4
Lever Ass'y, EJECT
X-3152-511-0 Ⓓ
Head Deck Ass'y
3-483-110-00 Ⓐ
Collar
Brake
PS 2.6 x 4
9-911-815-02 Ⓒ
Absorber, noise
3-530-262-XX Ⓐ
Spring
Hook, spring
Complete Circuit Board, bias trap
Complete Circuit Board, head amp
(CCP-13, MASTER)
K 2.6 x 4
3-148-693-00 Ⓐ
Make-up Board
PS 2.6 x 6
S961 (SLAVE-1) (CCP-04A)
1-552-457-00 Ⓑ
S961 (MASTER) (CCP-13A)
S971 (SLAVE)
1-514-580-00 Ⓑ
Switch, slide
W 2.6
PSW 3 x 6
3-824-174-00 Ⓐ
Bushing
Holder, switch
Bracket, motor
PS 3 x 6
Printed Circuit Board, track selector
9-911-839-XX Ⓒ
Cushion
Printed Circuit Board, bias indicator
PS 2.6 x 4
K 2.6 x 4
3-152-576-00 Ⓑ
Retainer, steel ball
Steel Ball, 2 mm dia.
Holder, switch (A)
(CCP-04A, SLAVE-1)
E 2
Retainer, cassette
4-303-774-XX Ⓐ
Spring
Chassis Ass'y
PS 2.6 x 4
3-512-576-00 Ⓑ
Retainer, steel ball
9-911-815-02 Ⓒ
Absorber, noise
Steel Ball, 2 mm dia.
3-491-256-XX Ⓐ
Roller, head deck

(5) (CCP-13A/04A)


1
2
3
4
5
Pulley Ass'y, motor
P 2 x 4
P 2 x 4
PSW 3 x 14
PSW 3 x 6
Bracket, motor
Lug, 3 mm dia.
Cushion
Cushion
3-645-087-XX Ⓐ Spring
8-831-414-13 Ⓞ Motor, HC-414B (M901: MASTER, M902: SLAVE)
9-911-815-02 Ⓒ Absorber, noise
3-152-575-00 Ⓑ Pin
3-701-438-01 (t0.13) Ⓐ Washer, plastic; 2.5 mm dia.
E 2
X-3152-517-0 Ⓓ Pulley Ass'y, intermediate
3-701-438-11 (t0.25) Ⓐ
3-701-438-01 (t0.13) Ⓐ
Washer, plastic; 2.5 mm dia.
E 2
P 2 x 4
PS 3 x 6
Plate, bearing
PSW 3 x 6
Plate, thrust
Retainer, thrust plate
3-491-224-00 Ⓑ Belt, capstan
X-3152-502-0 Ⓗ Flywheel Ass'y
3-701-439-11 Ⓐ Washer
PS 2.6 x 4
PS 2.6 x 4
x-31486-02-0
Bearing Ass'y, capstan
PSW 3 x 6
Supplied with Capacitor C901 or C902
1-117-093-11 Ⓔ Capacitor, 0.6μF + 0.4μF; metalized paper (C901: MASTER, CCP-13A) (C902: SLAVE, CCP-13A/04A)
Lug, 3 mm dia.
PS 2.6 x 4
X-3152-512-0 Ⓛ FG Ass'y (PG901: MASTER, CCP-13A) (PG902: SLAVE)
3-645-120-00 Ⓑ Belt, tape counter
Support
3-701-788-XX Ⓑ Spring
9-911-815-02 Ⓒ Absorber, noise
E 3
Lever Ass'y, switch
Support
PSW 3 x 6
Complete Circuit Board, mech-control
W 3, w/external tooth
N 3
SW 3
N 3
PSW 3 x 6
W 3, w/external tooth
Lug, 3 mm dia.
Support
Heat Sink
Q806, 808
3-701-788-XX Ⓑ Spring
W 3, w/external tooth
P 3 x 12
9-911-815-02 Ⓒ Absorber, noise
3-701-439-01 (t0.13) Ⓐ
3-701-439-11 (t0.25) Ⓐ
Washer, plastic, 3 mm dia.
E 2
X-3152-509-0 Ⓑ Arm Ass'y, tension
E 1.5
X-3152-510-0 Ⓕ Pulley Ass'y, tension
3-701-437-11 (t0.25) Ⓐ
3-701-437-01 (t0.13) Ⓐ
Washer, plastic; 2 mm dia.
E 2
E 2
E 2
Lever Ass'y, rewind
Pin, joint (Supplied with solenoid)
1-454-056-00 Ⓕ Solenoid, rewind (PM801: MASTER, PM803: SLAVE)
E 2
Lever, playback
PS 2.6 x 8
W 2.6
3-701-443-11 (t0.25) Ⓐ
3-701-443-01 (t0.13) Ⓐ
Washer, plastic; 5 mm dia.
X-3152-507-0 Ⓒ Idler Ass'y, rewind
X-3152-504-0 Ⓑ Idler Ass'y, arm
E 1.5
E 2
3-537-783-XX Ⓑ Spring
9-911-815-02 Ⓒ Absorber, noise
E 2
E 2
Lever Ass'y, forward
1-454-054-00 Ⓘ Solenoid, COPY (PM802: MASTER, PM804: SLAVE)
Pin, joint (Supplied with solenoid)
E 2
3-483-105-00 Ⓐ Spacer (C)
E 1.5
3-491-149-00 Ⓐ Clutch, reel shaft
3-701-437-21 (t0.5) Ⓐ Washer, plastic; 2 mm dia.
X-3491-011-0 Ⓑ Wheel Ass'y, clutch
3-491-148-00 Ⓐ Felt, clutch
E 2
Lever Ass'y, rewind
9-911-815-02 Ⓒ Absorber, noise
3-139-436-00 Ⓐ Spring
E 2
3-701-439-11 (t0.25) Ⓐ
3-701-439-01 (t0.13) Ⓐ
Washer, plastic; 3 mm dia.
X-3152-503-0 Ⓔ Arm Ass'y, rewind
Spring
9-911-815-02 Ⓒ Absorber, noise
3-145-817-00 Ⓐ Cushion
PSW 3 x 6
PSW 3 x 6
PSW 3 x 6
Chassis Ass'y
Support
PSW 3 x 6

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

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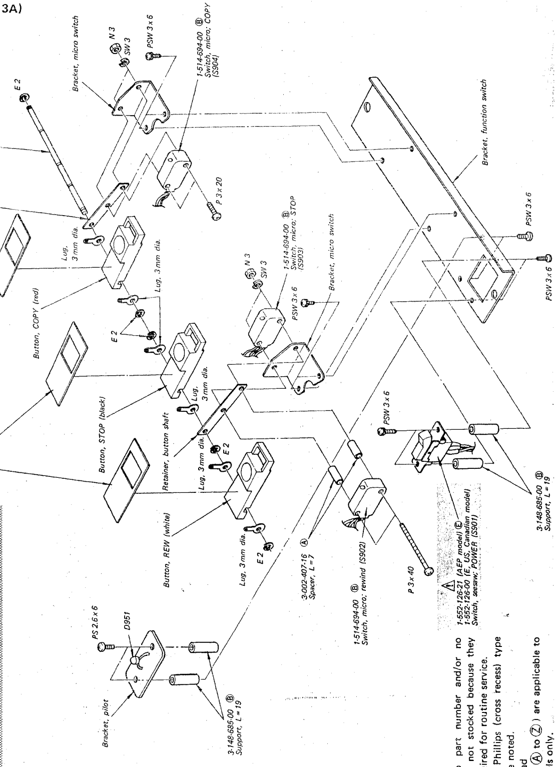
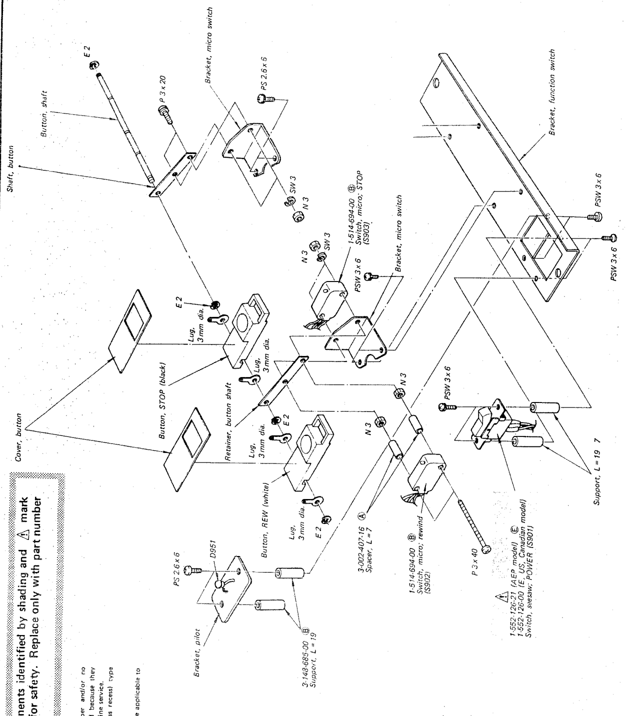
(6) (CCP-13A)


E 2
Shaft, button
Bracket, micro switch
N 3
SW 3
PSW 3 x 6
1-514-694-00 Ⓑ Switch, micro; COPY (S904)
P 3 x 20
Retainer, button shaft
Lug, 3 mm dia.
Lug, 3 mm dia.
Button, COPY (red)
E 2
Lug, 3 mm dia.
Button, STOP (black)
Retainer, button shaft
Lug, 3 mm dia.
E 2
Cover, button
Button, REW (white)
Lug, 3 mm dia.
E 2
1-514-694-00 Ⓑ Switch, micro; STOP (S903)
N 3
SW 3
PSW 3 x 6
Bracket, micro switch
Bracket, function switch
PSW 3 x 6
PSW 3 x 6
PSW 3 x 6
3-002-407-16 Ⓐ Spacer, L = 7
1-514-694-00 Ⓑ Switch, micro; rewind (S902)
P 3 x 40
⚠ 1-552-126-21 (AEP model) Ⓔ
1-552-126-00 (E, US, Canadian model)
Switch, seesaw; POWER (S901)
3-148-685-00 Ⓑ Support, L = 19
PS 2.6 x 6
D951
Bracket, pilot
3-148-685-00 Ⓑ Support, L = 19

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

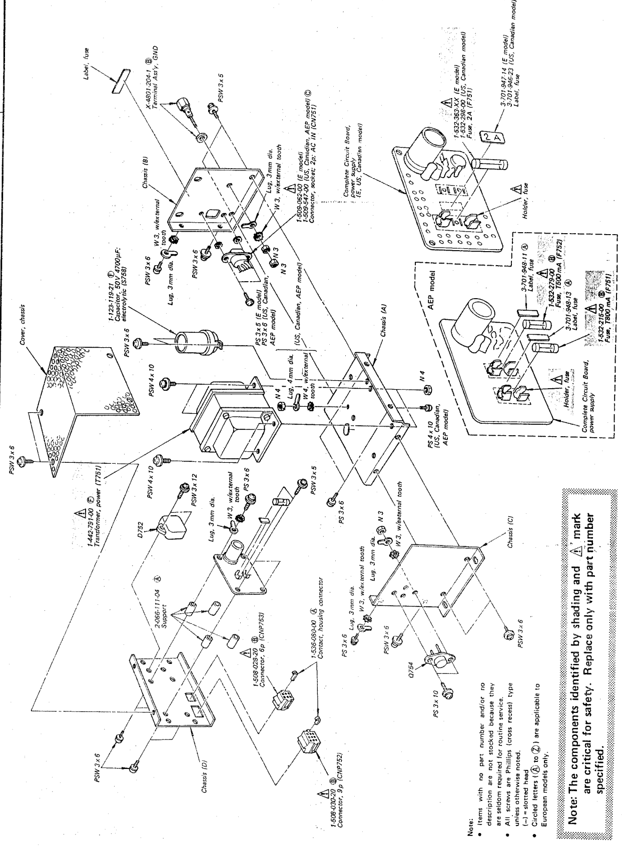
(7) (CCP-04A)


Shaft, button
Button, shaft
E 2
P 3 x 20
Bracket, micro switch
PS 2.6 x 6
SW 3
N 3
Cover, button
Button, STOP (black)
Lug, 3mm dia.
E 2
Lug, 3mm dia.
Retainer, button shaft
Lug, 3mm dia.
E 2
Button, REW (white)
Lug, 3mm dia.
E 2
N 3
SW 3
1-514-694-00 Ⓑ Switch, micro; STOP (S903)
PSW 3 x 6
Bracket, micro switch
Bracket, function switch
PSW 3 x 6
PSW 3 x 6
N 3
N 3
PSW 3 x 6
Support, L = 19 7
3-002-407-16 Ⓐ Spacer, L = 7
1-514-694-00 Ⓑ Switch, micro; rewind (S902)
P 3 x 40
⚠ 1-552-126-21 (AEP model) Ⓔ
1-552-126-00 (E, US, Canadian model)
Switch, seesaw; POWER (S901)
PS 2.6 x 6
D951
Bracket, pilot
3-143-685-00 Ⓑ Support, L = 19

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

(8) (CCP-13A/04A)


Label, fuse
X-4801-204-1 Ⓑ Terminal Ass'y, GND
PSW 3 x 5
Chassis (B)
W 3, w/external tooth
PSW 3 x 6
Lug, 3mm dia.
PSW 3 x 6
Lug, 3mm dia.
W 3, w/external tooth
⚠ 1-509-062-00 (E model)
1-509-547-00 (US, Canadian, AEP model) Ⓒ
Connector, socket; 2p; AC IN (CN751)
N 3
N 3
Complete Circuit Board, power supply (E, US, Canadian model)
⚠ 1-532-363-XX (E model)
1-532-298-00 (US, Canadian model)
Fuse, 2A (F751)
2A
3-701-947-14 (E model)
3-701-946-23 (US, Canadian model)
Label, fuse
⚠ Holder, fuse
1-123-119-21 Ⓕ Capacitor, 50V 4700μF; electrolytic (S758)
PSW 3 x 6
PS 3 x 5 (E model)
PS 3 x 6 (US, Canadian, AEP model)
(US, Canadian, AEP model)
Chassis (A)
Cover, chassis
PSW 4 x 10
N 4
Lug, 4mm dia.
W 4, w/external tooth
N 4
PS 4 x 10 (US, Canadian, AEP model)
AEP model
3-701-948-11 Ⓐ Label, fuse
⚠ 1-532-279-00 Ⓑ Fuse, T500mA (F752)
3-701-948-13 Ⓐ Label, fuse
⚠ 1-532-215-00 Ⓑ Fuse, T800mA (F751)
⚠ Holder, fuse
Complete Circuit Board, power supply
PSW 3 x 6
PSW 4 x 10
⚠ 1-442-791-00 Ⓕ Transformer, power (T751)
PSW 3 x 12
D752
Lug, 3mm dia.
W 3, w/external tooth
PS 3 x 6
PSW 3 x 5
PS 3 x 6
N 3
Lug, 3mm dia.
W 3, w/external tooth
W 3, w/external tooth
Chassis (C)
2-066-111-04 Ⓐ Support
⚠ 1-508-028-20 Ⓑ Connector, 6p (CNP753)
1-536-080-00 Ⓐ Contact, housing connector
PS 3 x 6
Lug, 3mm dia.
W 3, w/external tooth
PSW 3 x 6
Q754
PS 3 x 10
PSW 3 x 6
PSW 3 x 6
Chassis (D)
⚠ 1-508-030-20 Ⓑ Connector, 9p (CNP752)

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

SECTION 6
ELECTRICAL PARTS LIST

Note:
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

SEMICONDUCTORS

Transistors

Ref. No.	Part No.	Description	
Q1–3		Ⓑ 2SC634A	
Q6–10		Ⓑ 2SC634A	
Q12–15		Ⓑ 2SC634A (CCP-13A)	
Q101		Ⓒ 2SC1173	
Q102		Ⓒ 2SA473	
Q103		Ⓑ 2SC634A	
Q104		Ⓒ 2SA678	
Q105,106		Ⓑ 2SC634A	
Q151		Ⓒ 2SA678	
Q152		Ⓑ 2SC634A	
Q153		Ⓒ 2SC1173	
Q154		Ⓒ 2SA473	
Q401		Ⓒ 2SK43	(CCP-13A)
⇒Q402		Ⓑ 2SC631A	
Q411–413		Ⓑ 2SC634A	
⇒Q414		Ⓒ 2SC1013	
Q451		Ⓒ 2SK43	
Q452		Ⓑ 2SC631A	
Q461–463		Ⓑ 2SC634A	
Q464		Ⓒ 2SC1013	
Q501		Ⓒ 2SK43	
Q502		Ⓑ 2SC631A	
Q511–513		Ⓑ 2SC634A	
Q514		Ⓒ 2SC1013	
Q551		Ⓒ 2SK43	
Q552		Ⓑ 2SC631A	
Q561–563		Ⓑ 2SC634A	
Q564		Ⓒ 2SC1013	
Q601		Ⓑ 2SC634A	
Q701		Ⓑ 2SC634A	
⇒Q751,752		Ⓒ 2SA678	
⇒Q753		Ⓒ 2SC1013	
⇒Q754		Ⓚ 2SC793	

Ref. No.	Part No.	Description
Q801–805		Ⓑ 2SC634A
Q807		Ⓑ 2SC634A

ICs

Ref. No.	Part No.	Description
IC201 IC251		Ⓓ TA7066P
IC301 IC351		Ⓓ TA7066P

Diodes

Ref. No.	Part No.	Description
⇒D1–3		Ⓑ 1T40
⇒D5–7		Ⓑ 1T40
⇒D9		Ⓑ 1T40
⇒D10		Ⓑ 1T40 (CCP-13A)
⇒D12,13		Ⓑ 1T40 (CCP-13A)
⇒D15–20		Ⓑ 1T40
⇒D21		Ⓑ 1T40 (CCP-13A)
⇒D23–28		Ⓑ 1T40 (CCP-13A)
⇒D31,32		Ⓑ 1T40 (CCP-04A)
⇒D34		Ⓑ 1T40
⇒D35		Ⓑ 1T40 (CCP-13A)
⇒D101,102		Ⓑ 10D2
⇒D151,152		Ⓑ 10D2
⇒D601,602		Ⓑ 1T40 (CCP-13A)
⇒D651		Ⓑ 1T40
D701		Ⓒ SLP24B
⇒D751		Ⓑ 1S335
⇒D752		Ⓛ 6B-20
⇒D801		Ⓑ 1T40
⇒D802		Ⓑ 10D2
⇒D803–807		Ⓑ 1T40
⇒D808,809		Ⓑ 10D2
⇒D810,811		Ⓑ 1T40
⇒D815,816		Ⓑ 1T40
D951		Ⓒ SLP224B

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note:
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Thermistor

Ref. No.	Part No.	Description
THP801	1-800-471-00	Ⓓ Thermistor, positive

TRANSFORMERS

Ref. No.	Part No.	Description
T651	1-427-406-00	Ⓚ Output
T751	⚠ 1-442-791-00	Ⓡ Power Supply

COILS

Ref. No.	Part No.	Description
L101	1-407-261-00	Ⓑ Variable Inductor, 100μH
L102	1-407-198-XX	Ⓑ Micro Inductor, 2.2 mH
L151	1-407-261-11	Ⓑ Variable Inductor, 100μH
L201,251 L301,351	1-407-283-11	Ⓑ Micro Inductor, 680μH
L651–654	1-407-283-00	Ⓑ Variable Inductor, 680μH

CAPACITORS

All capacitors are in μF unless otherwise noted. 50WV or less are not indicated except for electrolytics. pF = μμF, elect = electrolytic

Ref. No.	Part No.	Description				
C1	1-121-398-11	Ⓐ	10	25V	elect	
C2,3	1-108-227-12	Ⓐ	0.001		mylar	
C4	1-108-237-12	Ⓐ	0.0068		mylar	
C8	1-121-398-11	Ⓐ	10	25V	elect	
C9	1-108-237-12	Ⓐ	0.0068		mylar	
C10,11	1-108-227-12	Ⓐ	0.001		mylar	
C10–13	1-108-227-12	Ⓐ	0.001		mylar	(CCP-13A)
C14	1-108-244-12	Ⓐ	0.033		mylar	
C15	1-121-391-11	Ⓐ	1	50V	elect	
C16	1-121-395-11	Ⓐ	4.7	25V	elect	
C17	1-121-398-11	Ⓑ	10	25V	elect	
C18	1-121-242-12	Ⓑ	0.022		mylar	
C101	1-108-254-12	Ⓑ	0.22		mylar	
C102	1-121-738-11	Ⓐ	10	50V	elect	
C103–105	1-121-393-11	Ⓐ	3.3	50V	elect	
C106	1-108-242-12	Ⓐ	0.022		mylar	
C107	1-121-738-11	Ⓐ	10	50V	elect	
C108	1-108-242-12	Ⓐ	0.022		mylar	
C109	1-107-085-11	Ⓐ	100p		mica	
C110	1-108-242-12	Ⓐ	0.022		mylar	
C111	1-103-717-11	Ⓐ	470p		polystyrol	
C112	1-103-713-11	Ⓐ	330p		polystyrol	
C113	1-108-246-12	Ⓐ	0.047		mylar	
C114	1-107-085-11	Ⓐ	100p		mica	
C151–154	1-121-393-11	Ⓐ	3.3	50V	elect	
C155	1-121-738-11	Ⓐ	10	50V	elect	
C156	1-108-254-12	Ⓑ	0.22		mylar	
C157	1-123-057-11	Ⓑ	33	50V	elect	
C201,251 C301,351	1-121-936-11	Ⓑ	220	25V	elect	
C202,252 C302,352	1-121-395-11	Ⓐ	4.7	25V	elect	
C203,253 C204,254 C303,353 C304,354	1-121-404-11	Ⓐ	33	25V	elect	
C205,255 C305,355	1-108-244-12	Ⓐ	0.033		mylar	
C206,256 C306,356	1-108-237-12	Ⓐ	0.0068		mylar	
C207,257 C307,357	1-108-227-12	Ⓐ	0.001		mylar	
C208,258 C308,358	1-121-398-11	Ⓐ	10	25V	elect	
C209,259 C309,359	1-108-230-12	Ⓐ	0.0022		mylar	
C401,451 C501,451	1-121-398-11	Ⓐ	10	25V	elect	(CCP-13A)
C402,452 C502,552	1-107-085-11	Ⓐ	100p		mica	
C403,453 C503,553 C404,453 C504,554	1-121-651-11	Ⓐ	10	16V	elect	

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*				
C405,455 C505,555	1-121-392-11	Ⓐ	3.3	25V	elect	(CCP-13A)
C406,456 C506,556	1-108-244-12	Ⓐ	0.033		mylar	
C407,457 C507,557	1-108-234-12	Ⓐ	0.0047		mylar	
C408,458 C508,558	1-107-069-11	Ⓐ	22p		mica	
C411,461 C511,561	1-212-392-11	Ⓐ	3.3	25V	elect	
C412,462 C512,562	1-123-058-11	Ⓑ	47	50V	elect	
C413,463 C513,563	1-108-239-12	Ⓐ	0.01		mylar	
C414,464 C514,564	1-107-079-11	Ⓐ	56p		mica	
C415,465 C515,565	1-121-398-11	Ⓐ	10	25V	elect	
C416,466 C516,566	1-121-409-11	Ⓐ	47	10V	elect	
C418,468 C518,568	1-121-404-11	Ⓐ	33	25V	elect	
C419,469 C519,569	1-123-058-11	Ⓑ	47	50V	elect	
C601	1-121-391-11	Ⓐ	1	50V	elect	
C602	1-121-651-11	Ⓐ	10	16V	elect	
C603–605	1-121-391-11	Ⓐ	1	50V	elect	
C651–654	1-103-906-11	Ⓑ	100p	125V	polystyrol	
C655	1-108-242-12	Ⓐ	0.022		mylar	
C656	1-107-061-11	Ⓑ	10p		mica	
C752,753	1-108-240-12	Ⓐ	0.015		mylar	
C754	1-108-244-12	Ⓐ	0.033		mylar	
C755	1-108-252-12	Ⓑ	0.15		mylar	
C756	1-125-083-11	Ⓓ	1000	50V	elect	
C757	1-108-244-12	Ⓐ	0.033		mylar	
C758	1-123-119-11	Ⓕ	4700	50V	elect	
C801	1-108-239-12	Ⓐ	0.01		mylar	
C802	1-121-398-11	Ⓐ	10	25V	elect	
C803	1-121-414-11	Ⓐ	100	10V	elect	
C804	1-121-404-11	Ⓐ	33	25V	elect	
C805,806	1-121-409-11	Ⓐ	47	16V	elect	
C807	1-121-395-11	Ⓐ	4.7	25V	elect	
C901	⚠1-117-093-11	Ⓔ	0.6+0.4	250V	metalized paper	(MASTER, CCP-13A)
C902	⚠1-117-093-11	Ⓔ	0.6+0.4	250V	metalized paper	(SLAVE, CCP-13A/04A)
C971		Ⓐ	220p		mica	
VC651–654	1-141-143-11	Ⓑ	50p		trimmer	

RESISTORS

All resistors are in ohms.
Check schematic diagram for values.

R9	1-206-660-11	Ⓐ	680	2W	metal oxide	
R33	1-206-660-11	Ⓐ	680	2W	metal oxide	
R160,161	1-212-360-11	Ⓐ	1	½W	carbon	
R420,470 R520,570	1-209-220-11	Ⓐ	560	1W	(CCP-13A)	
R422,472 R522,572	1-211-417-11	Ⓐ	22	⅛W	(CCP-13A)	
R757	1-206-658-11	Ⓐ	560	2W	metal oxide	
R818,812	1-213-131-11	Ⓐ	100	½W	carbon	
R819,825	1-212-362-11	Ⓐ	1.5	½W	carbon	
R829	1-206-648-11	Ⓐ	220	2W	metal oxide	
VR101	1-224-251-XX	Ⓒ	4.7 k, adjustable			
VR151	1-224-252-XX	Ⓒ	10 k, adjustable			
VR201,251 VR301,351	1-224-253-XX	Ⓒ	22 k, adjustable			
VR401,451 VR501,551	1-224-250-XX	Ⓒ	2.2 k, adjustable			(CCP-13A)
VR411,461 VR511,561	1-224-252-XX	Ⓒ	10 k, adjustable			(CCP-13A)
VR601	1-224-254-XX	Ⓒ	47 k, adjustable			(CCP-13A)
VR751	1-224-249-XX	Ⓑ	1 k, adjustable			

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

FUSES

Ref. No.	*Part No.*	*Description*
F751 ⚠	1-532-215-00	Ⓑ T800 mA (AEP model)
	1-532-298-00	Ⓑ 2A (US, Canadian model)
	1-532-363-XX	Ⓑ 2A (E model)
F752	⚠1-532-279-00	Ⓑ T500 mA (AEP model)

SWITCHES

Ref. No.	*Part No.*	*Description*
S601	1-516-630-00	Ⓔ Rotary, MASTER LEVEL (CCP-13A)
S901 ⚠	1-552-126-00	Ⓔ Power (E, US, Canadian model)
	1-552-126-11	Ⓔ Power (AEP model)
S902–904	1-514-694-00	Ⓑ Miniature, S902: REW; S903: STOP; S904: COPY (CCP-13A)
S902,903	1-514-694-00	Ⓑ Miniature, S902: REW; S903: STOP (CCP-04A)
S961	1-514-580-00	Ⓑ Slide, track selector (CCP-13A)
	1-552-457-00	Ⓒ Slide, track selector (SLAVE-1, CCP-04A)
S971	1-514-580-00	Ⓑ Slide, track selector

MISCELLANEOUS

Ref. No.	*Part No.*	*Description*
CN751 ⚠	1-509-062-00	Ⓑ Connector, socket; 2p AC IN (E model)
	1-509-547-00	Ⓒ Connector, socket; 3p AC IN (US, Canadian, AEP model)
CNJ752	1-508-031-20	Ⓑ Housing, 9p amp lok
CNJ753	1-508-029-20	Ⓑ Housing, 6p amp lok
CNP752	⚠1-508-030-20	Ⓑ Housing, 9p amp lok
CNP753	⚠1-508-028-20	Ⓑ Housing, 6p amp lok
CNP901,902	1-508-028-20	Ⓑ Plug, 6p
HE	8-825-682-00	Ⓑ Head, erase
HP901	8-825-648-10	Ⓩ Head, playback; PF165-3604B (CCP-13A)
HR901	8-825-649-10	Ⓩ Head, record; PF165-3604A
J901–908	1-507-476-XX	Ⓒ Jack, LINE IN: J901–J902; LINE OUT: J905–J908
M901,902	⚠8-831-414-13	Ⓞ Motor, HC-414B1 901: MASTER; 902: SLAVE (CCP-13A)
M902	⚠8-831-414-13	Ⓞ Motor, HC-414B1 (CCP-04A)
ME601–604	1-520-114-00	Ⓗ Meter, level (CCP-13A)
PM801	1-454-056-00	Ⓕ Solenoid, MASTER (CCP-13A)
PM802	1-454-054-00	Ⓘ Solenoid, MASTER (CCP-13A)
PM803	1-454-056-00	Ⓕ Solenoid, SLAVE
PM804	1-454-054-00	Ⓘ Solenoid, SLAVE
THP801	1-800-471-00	Ⓓ Thermistor, positive
X101	1-527-239-00	Ⓢ X'tal Bias Osc; 480 kHz
	⚠1-517-072-00	Ⓐ Holder, fuse
	1-535-100-00	Ⓐ Solderless Terminal
	1-536-080-00	Ⓐ Contact, amp lok
	1-536-354-00	Ⓐ Pin, post (CCP-13A)

ACCESSORIES & PACKING MATERIALS

Part No.	*Description*
X-3701-105-1	Ⓐ Tips Ass'y, head cleaning
1-508-029-20	Ⓑ Housing, 6p amp lok (CCP-04A)
1-534-827-00	Ⓒ Cord, power; 3p (US, Canadian model)
1-536-080-11	Ⓐ Contact, amp lok (CCP-04A)
1-551-114-XX	Ⓕ Cord, power; 2p (E model) (CCP-13)
1-551-258-00	Ⓙ Cord, power; 3p (AEP model (CCP-13)
1-551-111-00	Ⓕ Cable, system control (CCP-04A)
⚠1-551-114-XX	Ⓕ Cord, power; DK-28 2p (E model)
1-551-258-00	Ⓙ Cord, power; 3p (AEP model)
1-551-308-11	Ⓙ Cord, connector (CCP-04A)
1-551-308-12	Ⓙ Cord, connector (CCP-04A)
3-148-646-01	Ⓙ Cover, dustproof
3-701-628-01	Ⓐ Bag, plastic (CCP-04A)
3-701-630-01	Ⓐ Bag, plastic (CCP-04A)
3-770-376-11	Ⓕ Manual, instruction
3-794-132-71	Ⓔ Leaflet, arabic (E, AEP model)

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

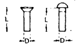
1/4 WATT CARBON RESISTORS Ⓐ

Note:
- Circled letter Ⓐ is applicable to European models only.

Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*
1.0	1-244-601-11	10	1-244-625-11	100	1-244-649-11	1.0k	1-244-673-11	10k	1-244-697-11	100k	1-244-721-11	1.0M	1-244-745-11
1.1	1-244-602-11	11	1-244-626-11	110	1-244-650-11	1.1k	1-244-674-11	11k	1-244-698-11	110k	1-244-722-11	1.1M	1-244-746-11
1.2	1-244-603-11	12	1-244-627-11	120	1-244-651-11	1.2k	1-244-675-11	12k	1-244-699-11	120k	1-244-723-11	1.2M	1-244-747-11
1.3	1-244-604-11	13	1-244-628-11	130	1-244-652-11	1.3k	1-244-676-11	13k	1-244-700-11	130k	1-244-724-11	1.3M	1-244-748-11
1.5	1-244-605-11	15	1-244-629-11	150	1-244-653-11	1.5k	1-244-677-11	15k	1-244-701-11	150k	1-244-725-11	1.5M	1-244-749-11
1.6	1-244-606-11	16	1-244-630-11	160	1-244-654-11	1.6k	1-244-678-11	16k	1-244-702-11	160k	1-244-726-11	1.6M	1-244-750-11
1.8	1-244-607-11	18	1-244-631-11	180	1-244-655-11	1.8k	1-244-679-11	18k	1-244-703-11	180k	1-244-737-11	1.8M	1-244-751-11
2.0	1-244-608-11	20	1-244-632-11	200	1-244-656-11	2.0k	1-244-680-11	20k	1-244-704-11	200k	1-244-728-11	2.0M	1-244-752-11
2.2	1-244-609-11	22	1-244-633-11	220	1-244-657-11	2.2k	1-244-681-11	22k	1-244-705-11	220k	1-244-729-11	2.2M	1-244-753-11
2.4	1-244-610-11	24	1-244-634-11	240	1-244-658-11	2.4k	1-244-682-11	24k	1-244-706-11	240k	1-244-730-11	2.4M	1-244-754-11
2.7	1-244-611-11	27	1-244-635-11	270	1-244-659-11	2.7k	1-244-683-11	27k	1-244-707-11	270k	1-244-731-11	2.7M	1-244-755-11
3.0	1-244-612-11	30	1-244-636-11	300	1-244-660-11	3.0k	1-244-684-11	30k	1-244-708-11	300k	1-244-732-11	3.0M	1-244-756-11
3.3	1-244-613-11	33	1-244-637-11	330	1-244-661-11	3.3k	1-244-685-11	33k	1-244-709-11	330k	1-244-733-11	3.3M	1-244-757-11
3.6	1-244-614-11	36	1-244-638-11	360	1-244-662-11	3.6k	1-244-686-11	36k	1-244-710-11	360k	1-244-734-11	3.6M	1-244-758-11
3.9	1-244-615-11	39	1-244-639-11	390	1-244-663-11	3.9k	1-244-687-11	39k	1-244-711-11	390k	1-244-735-11	3.9M	1-244-759-11
4.3	1-244-616-11	43	1-244-640-11	430	1-244-664-11	4.3k	1-244-688-11	43k	1-244-712-11	430k	1-244-736-11	4.3M	1-244-760-11
4.7	1-244-617-11	47	1-244-641-11	470	1-244-665-11	4.7k	1-244-689-11	47k	1-244-713-11	470k	1-244-737-11	4.7M	1-244-761-11
5.1	1-244-618-11	51	1-244-642-11	510	1-244-666-11	5.1k	1-244-690-11	51k	1-244-714-11	510k	1-244-738-11	5.1M	1-244-762-11
5.6	1-244-619-11	56	1-244-643-11	560	1-244-667-11	5.6k	1-244-691-11	56k	1-244-715-11	560k	1-244-739-11		
6.2	1-244-620-11	62	1-244-644-11	620	1-244-668-11	6.2k	1-244-692-11	62k	1-244-716-11	620k	1-244-740-11		
6.8	1-244-621-11	68	1-244-645-11	680	1-244-669-11	6.8k	1-244-693-11	68k	1-244-717-11	680k	1-244-741-11		
7.5	1-244-622-11	75	1-244-646-11	750	1-244-670-11	7.5k	1-244-694-11	75k	1-244-718-11	750k	1-244-742-11		
8.2	1-244-623-11	82	1-244-647-11	820	1-244-671-11	8.2k	1-244-695-11	82k	1-244-719-11	820k	1-244-743-11		
9.1	1-244-624-11	91	1-244-648-11	910	1-244-672-11	9.1k	1-244-696-11	91k	1-244-720-11	910k	1-244-744-11		

HARDWARE NOMENCLATURE

Screw: – P 3 x 10
- L: *Length in mm*
- D: *Diameter in mm*
- *Type of head*
- *Indicated slotted-head only. Unless otherwise indicated, it means cross-recessed head (Phillips type).*



Nut, Washer, Retaining ring:

N 3
- *Diameter of usable screw or shaft*
- *Reference designation*

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

Sony Corporation

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